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SETTLERS POINT
EIR NOISE ANALYSIS
COUNTY OF SAN DIEGO, CALIFORNIA

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SETTLERS POINT
EIR NOISE ANALYSIS
COUNTY OF SAN DIEGO, CALIFORNIA

1.0 EXECUTIVE SUMMARY

This noise study has been completed to determine the noise impacts associated with the development of the proposed Settlers Point Project. The project consists of four large parcels on approximately 22 acres. The Project site is located at the intersection of Highway 8 Business Route and Los Coches Road in the Lakeside Community of the County of San Diego.

The purpose of this noise assessment is to evaluate the noise impacts for the project study area and to recommend noise mitigation measures, if necessary, to minimize the potential project impacts. Preliminary exterior and interior noise requirements for parcel map approval are presented in this report.

1.1 Off-Site Transportation Noise Analysis

The off-site noise analysis indicates that the proposed project does not create an increase of more than 3.0 dBA CNEL along any analyzed roadway segments. There are also no cumulative impacts of more than 3.0 dBA CNEL on any analyzed roadway. Therefore, the proposed project's contributions to off-site roadway noise increases will not cause any significant impacts to any existing or future noise sensitive land uses.

1.2 On-Site Noise Analysis

The results of this analysis indicate that the combination of future vehicle noise from Highway 8 Business Route and Los Coches Road is the principal source of community noise that will impact the site. The building layouts for each parcel have not been determined at this time. Exterior noise levels will exceed the County of San Diego 60 dBA CNEL standard for residential developments in the portions of Parcels 3 & 4 located within 25 feet of the edges of pads.

To minimize traffic noise impacts, the project should provide the following noise mitigation measures summarized below:

Exterior Noise Mitigation

If noise sensitive land uses are located within 25 feet of the edges of pads for Parcels 3 & 4, a 4-foot noise barrier may be required along the edge of pad facing Highway 8 Business Route. Once the building layouts are determined for Parcels 3 & 4, a noise analysis must be completed to verify the exterior noise levels and required mitigation measures. Exhibit 1-A shows the mitigation and barrier heights which may be required to bring future noise levels to the County of San Diego 60 dBA CNEL exterior noise level standard for Parcels 3 & 4.

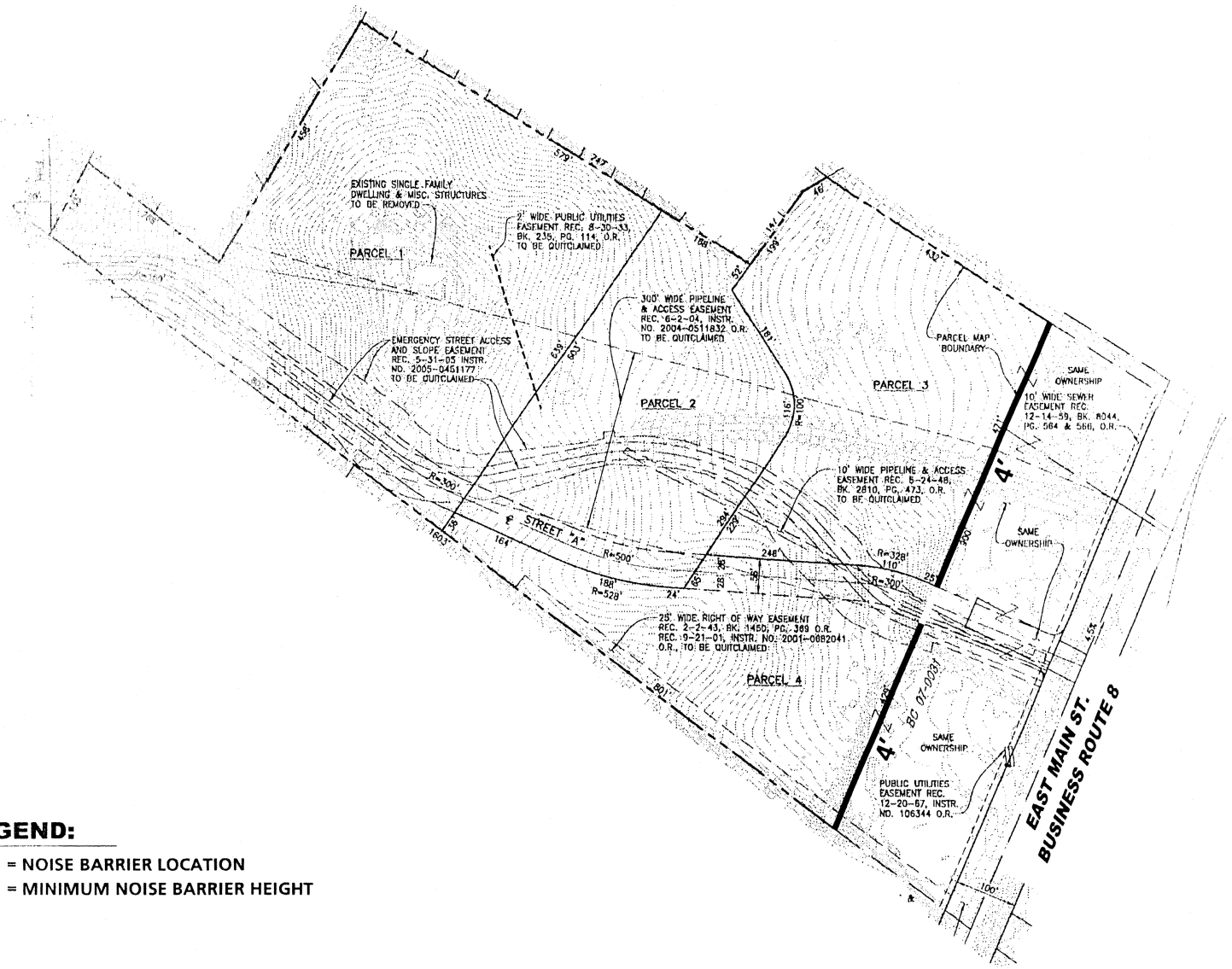
Interior Noise Mitigation

Noise levels were calculated for first and second floor receptors in all four parcels. These levels will need to be utilized to determine interior mitigation once architectural plans are finalized. Noise levels at the second floors of the portions of Parcels 3 & 4 located within 25 feet of the edges of pads were found to be above the General Plan Noise Element Standard, of 60 dBA CNEL. Therefore, interior mitigation may be required to obtain an interior level of 45 dBA CNEL. It should be noted; interior noise levels can easily be obtained with typical building construction methods and the follow recommendations:

- Provide a "windows closed" condition requiring a means of mechanical ventilation (e.g. air conditioning) for the second floors of all noise sensitive land uses located within 25 feet of the edges of pads for Parcels 3 & 4.
- Provide upgraded windows for the second floors of all noise sensitive land uses located within 25 feet of the edges of pads for Parcels 3 & 4.

EXHIBIT 1-A

SUMMARY OF POTENTIAL RECOMMENDATIONS



LEGEND:

▬ = NOISE BARRIER LOCATION

4' = MINIMUM NOISE BARRIER HEIGHT

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A final noise study shall be prepared upon completion of the building layout design for Parcels 3 & 4 which will verify interior noise levels and determine required mitigation measures. This report would finalize the noise requirements based upon precise grading plans and actual building design specifications.

1.3 Construction Noise Analysis

The project site and surrounding residential uses to the west, north and east of the site are zoned RS-4. South of the project is designated with a C-37 zone for commercial use. The nearest homes are located at a distance greater than 300 feet from the center of the proposed construction activities. Construction noise is of short-term duration and will not present any long-term impacts on the project site or the surrounding area. No mitigation will be required during the construction phase of the project.

2.0 INTRODUCTION

This noise study outlines the project, provides basic information regarding the fundamentals of traffic noise, describes local noise guidelines, provides the study methods and procedures for traffic noise analysis, and evaluates the future exterior and interior noise environments.

The proposed Settlers Point Project is generally located at the intersection of Highway 8 Business Route and Los Coches Road in the Lakeside Community of the County of San Diego as shown on Exhibit 2-A. The project consists of 4 parcels on approximately 22 acres, as shown on Exhibit 2-B.

Included in the report is a discussion of the expected exterior community noise environment at the noise sensitive land uses on the project site and recommendations for control of the noise impacts. In the following sections, noise exposures expected within the noise sensitive land uses are reviewed and compared to the applicable noise standards.

EXHIBIT 2-A

LOCATION MAP

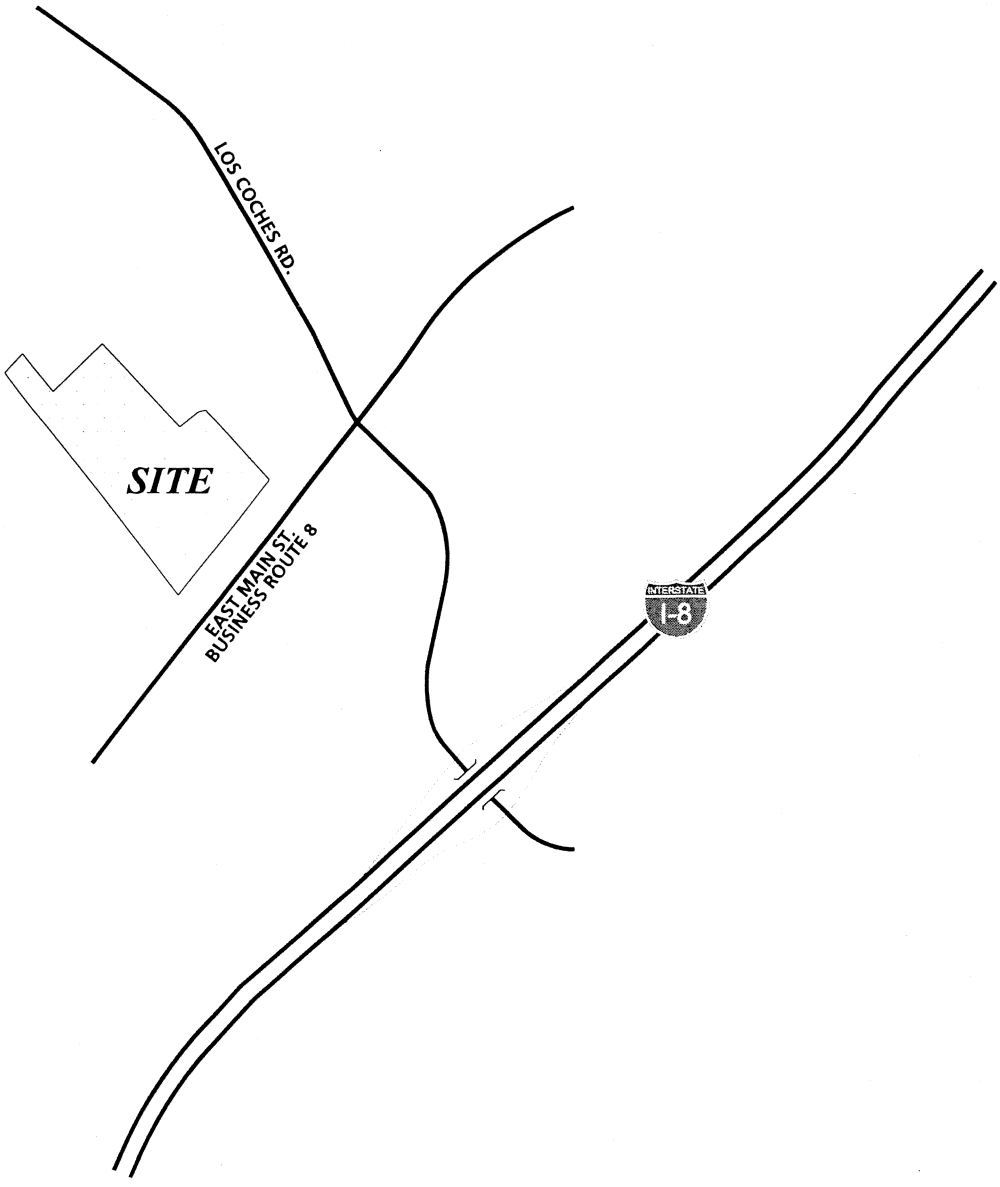

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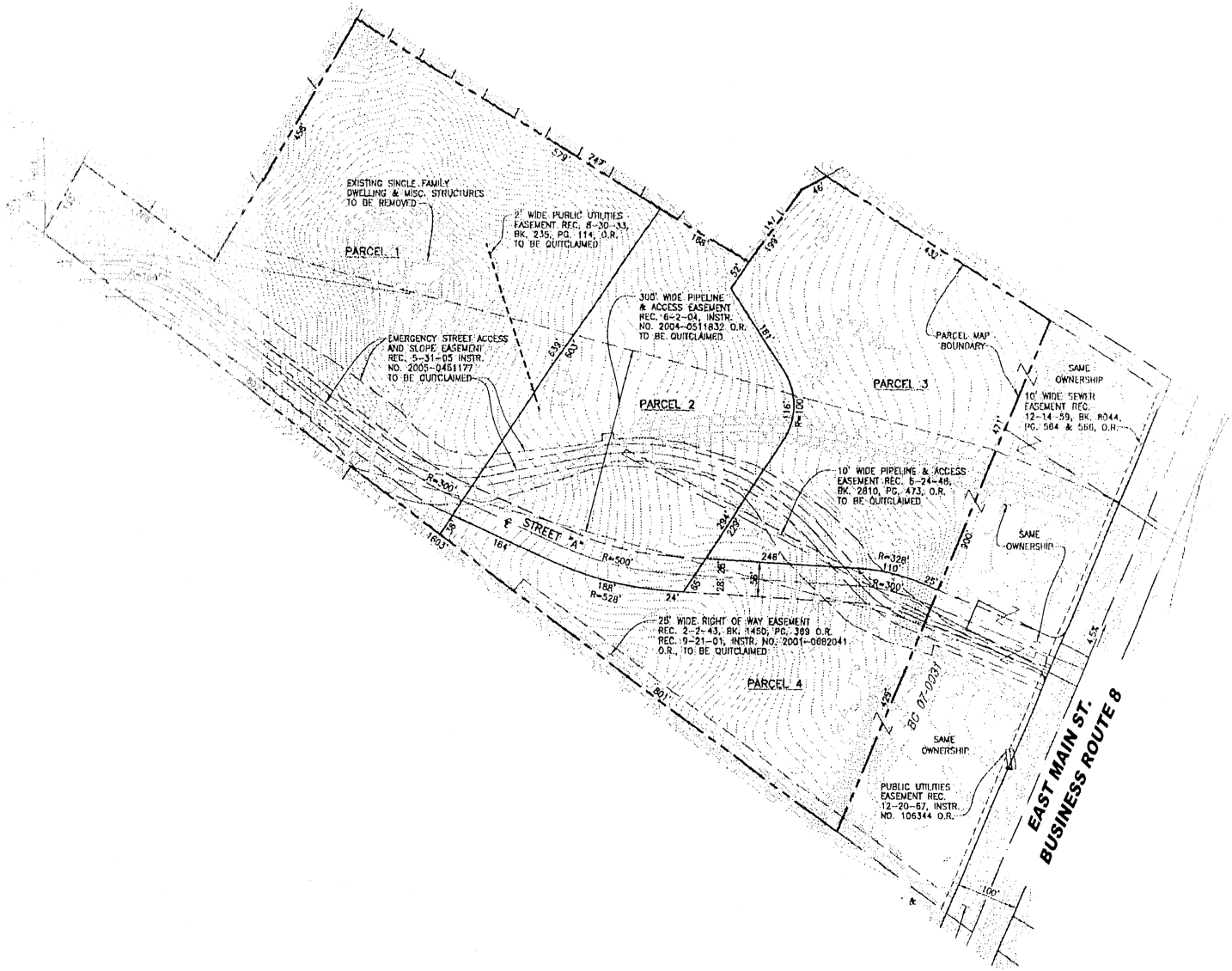
EXHIBIT 2-B

SITE PLAN



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3.0 NOISE FUNDAMENTALS

Noise has been simply defined as "unwanted sound". Sound becomes unwanted when it interferes with normal activities, when it causes actual physical harm or when it has adverse effects on health. Noise is measured on a logarithmic scale of sound pressure level known as a decibel (dB). A-weighted decibels (dBA) approximate the subjective response of the human ear to broad frequency noise source by discriminating against very low and very high frequencies of the audible spectrum. They are adjusted to reflect only those frequencies which are audible to the human ear.

3.1 Noise Descriptors

Equivalent sound levels are not measured directly but are calculated from sound pressure levels typically measured in A-weighted decibels (dBA). The equivalent sound level (Leq) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period. The peak hour Leq is the noise metric used by Caltrans for all traffic noise impact analysis.

The Community Noise Equivalent Level (CNEL) is the weighted average of the intensity of a sound, with corrections for time of day, and averaged over 24 hours. The time of day corrections require the addition of five decibels to sound levels in the evening from 7 p.m. to 10 p.m., and the addition of ten decibels to sound levels at night between 10 p.m. to 7 a.m. These additions are made to the sound levels at these time periods because during the evening and night hours, with the decrease in overall amount and loudness of noise generated, when compared to daytime hours, there is an increased sensitivity to sounds. For this reason the sound appears louder and it is weighted accordingly. The County of San Diego relies on the CNEL noise standard to assess transportation related impacts on noise sensitive land uses.

3.2 Traffic Noise Prediction

The level of traffic noise depends on the three primary factors: (1) the volume of the traffic, (2) the speed of the traffic, and (3) the number of trucks in the flow of traffic. Generally, the loudness of traffic noise is increased by heavier traffic volumes, higher speeds and greater number of trucks. Vehicle noise is a combination of the noise produced by the engine, exhaust and tires.

Because of the logarithmic nature of traffic noise levels, a doubling of the traffic noise (acoustic energy) results in a noise level increase 3 dBA. Based on the FHWA community noise assessment criteria this change is "barely perceptible". In other words, doubling the traffic volume (assuming that the speed and truck mix do not change) results in a noise increase of 3 dBA. The truck mix on a given roadway also has a significant effect on community noise levels. As the number of heavy trucks increases and becomes a larger percentage of the vehicle mix, adjacent noise levels increase.

3.3 Noise Control

Noise control is the process of obtaining an acceptable noise environment for a particular observation point or receiver by controlling the noise source, transmission path, receiver or all three. This concept is known as the source-path-receiver concept. In general, noise control measures can be applied to any and all of these three elements and a noise barrier is most effective when placed close to the noise source or receiver.

3.4 Ground Absorption

To account for the ground-effect attenuation (absorption), two types of site conditions are commonly used in traffic noise models, soft site and hard site conditions. Soft site conditions account for the sound propagation loss over

natural surfaces such as normal earth and ground vegetation. A drop-off rate of 4.5 dBA per doubling of distance is typically observed over soft ground with landscaping, as compared with a 3.0 dBA drop-off rate over hard ground such as asphalt, concrete, stone and very hard packed earth. To predict the worse-case future noise environment, hard site conditions were used for all floors in this analysis based on the topography in the site area and the monitoring results.

3.5 Noise Barrier Attenuation

Effective noise barriers can reduce noise levels by 10 to 15 decibels, cutting the loudness of traffic noise in half. Noise barriers however, do have limitations. For a noise barrier to work, it must be high enough and long enough to block the view of a road. Noise barriers do very little good for homes on a hillside overlooking a road or for building which rise above the barrier. A noise barrier can typically achieve a 5 decibel noise level reduction when it is tall enough to break the line-of-sight.

4.0 SAN DIEGO COUNTY NOISE STANDARDS

The County of San Diego addresses two separate types of noise sources through the CEQA process: (1) mobile, and (2) stationary. In the context of this noise analysis, the noise levels associated with the proposed Settlers Point Project are regulated by the County of San Diego noise guidelines for determining significance. Those guidelines are summarized below and provided as Appendix "A".

4.1 Noise Element Criteria

The County of San Diego has adopted interior and exterior noise standards as part of the County's Noise Element of the General Plan for assessing the compatibility of land uses with transportation related noise impacts. For assessing noise impacts to noise sensitive land uses, the County requires an exterior noise level of less than 60 dBA CNEL for outdoor living areas and an interior noise standard of 45 dBA CNEL.

Off-site project impacts describe the off-site transportation related noise associated with the development of the project. Noise level increases and impacts attributable to development of the proposed project are estimated by comparing the "with-project" traffic volume to the "without-project" traffic volume. For purposes of this study, roadway noise impacts would be considered significant if the project increases noise levels for a noise sensitive land use to 60 dBA CNEL or above or if the project increases pre-existing noise levels by 10 dBA CNEL or more.

4.2 Noise Ordinance Criteria

Section 36.404 of the San Diego County noise ordinance provides performance standards and noise control guidelines for determining and mitigating non-

transportation, or stationary, noise source impacts to residential properties. The purpose of the noise ordinance is to protect, create and maintain an environment free from noise and vibration that may jeopardize the health or welfare, or degrade the quality of life.

According to the stationary source exterior noise standards, no person shall operate any source of sound at any location within the County or allow the creation of any noise on a property which causes the noise levels to exceed the exterior noise limits at the property boundary within all zones. The noise ordinance sets an exterior noise limit for noise sensitive land uses adjacent to the property zoned S-88 of 50 dBA Leq for daytime hours of 7 a.m. to 10 p.m. and 45 dBA Leq during the noise sensitive nighttime hours of 10 p.m. to 7 a.m.

Section 36.410 of the County of San Diego ordinance controls construction equipment noise. Except for emergency work, it shall be unlawful for any person, including the County of San Diego, to operate construction equipment at any construction site, except as outlined in subsections (a) and (b) below:

(a) It shall be unlawful for any person to operate construction equipment between the hours of 7 p.m. of any day and 7 a.m. of the following day.

(b) It shall be unlawful for any person to operate construction equipment on Sundays, and days appointed by the President, Governor, or the Board of Supervisors for a public fast, Thanksgiving, or holiday, but a person may operate construction equipment on the above-specified days between the hours of 10 a.m. and 5 p.m. at his residence or for the purpose of constructing a residence for himself, provided that the average sound level does not exceed 75 decibels during the period of operation and that the operation of construction equipment is not carried out for profit or livelihood.

(c) It shall be unlawful to operate any construction equipment so as to cause at or beyond the property line of any property upon which a legal dwelling unit is located an average sound level greater than 75 decibels between the hours of 7 a.m. and 7 p.m.

For temporary activities, the County considers the 75 decibel (A) average to be based on a period of one hour.

In 1991, the U.S. Fish and Wildlife Service (USFWS) recommended that noise levels not exceed 60 dBA to protect the Gnatcatcher and other bird species. The County of San Diego has adopted this standard for all sensitive species. Therefore, the 60 dBA Leq will be used as the noise criteria to assess noise impacts on sensitive wildlife both on and off site.

4.3 Community Noise Assessment Criteria (CEQA)

The California Environmental Quality Act (CEQA) acknowledges that changes in noise levels greater than 3 dBA are often identified as "barely perceptible," while changes of 5 dBA are "readily perceptible." In the range of 1 dBA to 3 dBA, people who are very sensitive to noise may perceive a slight change in noise level. In laboratory testing situations, humans are able to detect noise level changes of slightly less than 1 dBA. However, in a community situation, the noise exposure is extended over a long time period, and changes in noise levels occur over years rather than the immediate comparison made in a laboratory situation. Therefore, the level at which changes in community noise levels become discernible is likely to be some value greater than 1 dBA, and 3 dBA appears to be appropriate for most people. For purposes of this study, noise impacts are considered significant if the project increases noise levels by 3 dBA and raises the noise levels above the County of San Diego 60 dBA CNEL.

5.0 NOISE LEVEL MEASUREMENTS

To determine the existing noise level environment and to assess potential noise impacts, measurements were taken at one worse-case location adjacent to Highway 8 Business Route. The noise measurement was recorded by Urban Crossroads, Inc. between the hours of 10:30 a.m. and 10:45 a.m. on November 7, 2007. Appendix "B" includes study area photos and Appendix "C" includes a summary of the monitoring data.

5.1 Measurement Procedure and Criteria

Noise measurements were taken using a Larson-Davis Model LxT Type 1 precision sound level meter, programmed, in "slow" mode, to record noise levels in "A" weighted form. The sound level meter and microphone were mounted on a tripod, five feet above the ground and equipped with a windscreen during all measurements. The sound level meter was calibrated before and after the monitoring using a Larson-Davis calibrator, Model CAL 200.

5.2 Noise Measurement Locations

Noise monitoring locations were selected based on their respective impact potential. The site is currently vacant with the exception of a minimal number of residential structures located in the northern portion of the project site.

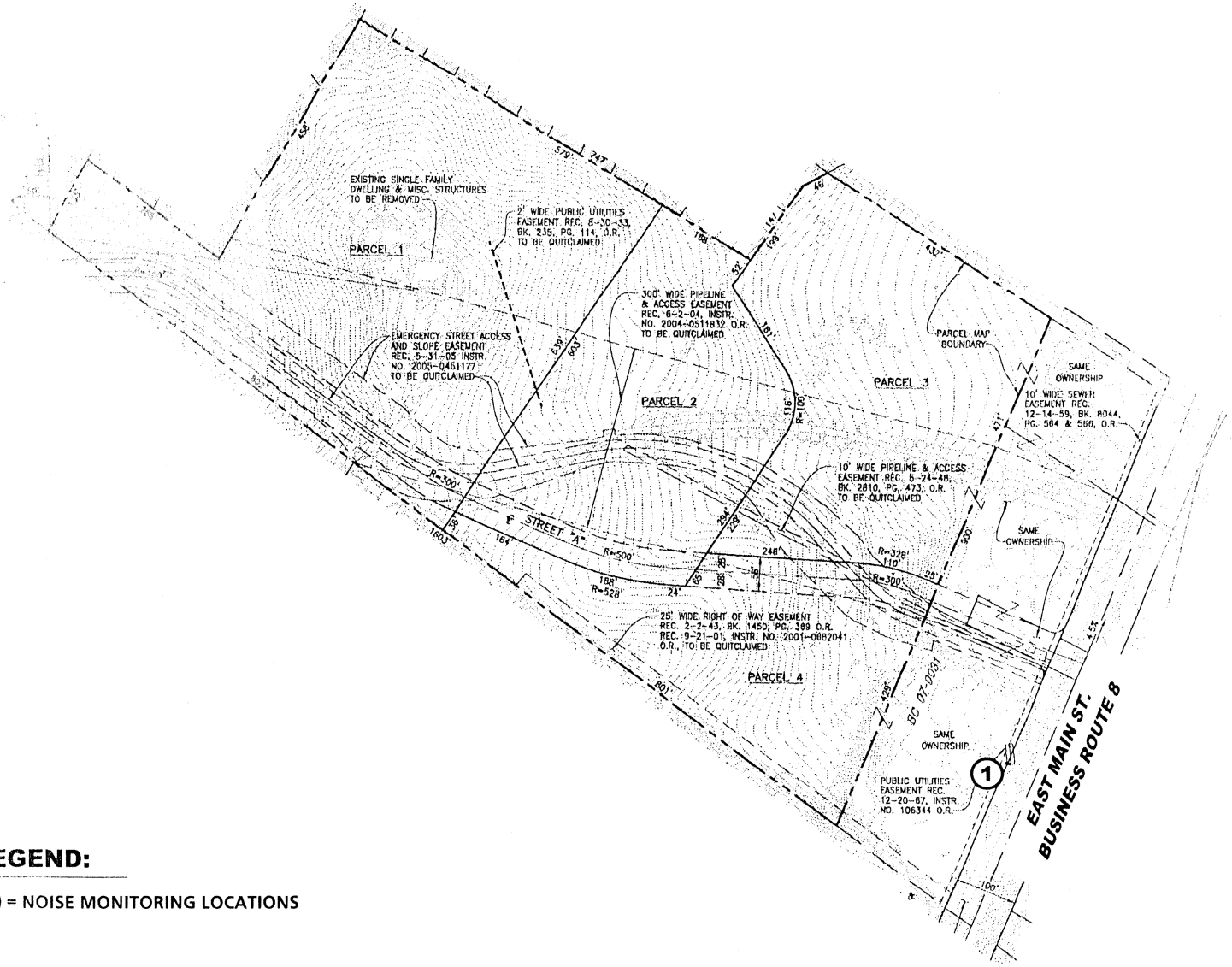
Monitoring location 1 was located 44 feet from the centerline of Highway 8 Business Route. The noise monitoring location is provided in Exhibit 5-A.

5.3 Noise Measurement Results

The result of the noise level measurement is presented in Table 5-1. The noise measurements were monitored for a minimum time period of 10 minutes. The existing ambient Leq noise levels measured in the area of the project during the

EXHIBIT 5-A

NOISE MONITORING LOCATIONS



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(1) = NOISE MONITORING LOCATIONS

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TABLE 5-1

EXISTING (AMBIENT) NOISE LEVEL MEASUREMENTS[1]

OBSERVER LOCATION[2]	DESCRIPTION	TIME OF MEASUREMENT	PRIMARY NOISE SOURCE	MEASURED NOISE LEVELS (dBA Leq)	L90	L50	L10
1	44 feet from the centerline of Highway 8 Business Route	10:30 AM	Vehicle noise from Highway 8 Business Route	67.9	51.0	63.7	71.3

[1] Noise measurement taken for a minimum period of 10 minutes by Urban Crossroads Inc on November 7, 2007.

[2] See Exhibit 5-A for the location of the monitoring site, and Appendix "B" for Study Area Photos.

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morning hour was found to be 67.9 dBA Leq at monitoring location 1. The L90 value at the monitoring location was 51.0 dBA Leq. The L90, L50 and L10 values for the monitoring location is also provided in Table 5-1. The project site is mostly vacant and the existing noise levels in the project area consist primarily of background vehicle traffic from Highway 8 Business Route. The speed limit used in the analysis is 55 miles per hour on Highway 8 Business Route.

6.0 METHODS AND PROCEDURES

The following section outlines the methods and procedures used to model and analyze the future noise environment.

6.1 FHWA Traffic Noise Prediction Model

The expected roadway noise impact from Highway 8 Business Route and Los Coches Road was projected using Sound32, Caltrans' version of the FHWA's STAMINA 2.0/OPTIMA Traffic Noise Prediction Model. Sound32 is a peak hour Leq based traffic noise prediction model. The results of this analysis are based on the Caltrans *Highway Design Manual* California Vehicle Noise Emission Levels (Calveno Curves). These curves more accurately reflect motor vehicle noise characteristics in the project area, and use of the Calveno curves is required by Section 1103.1 of the *Highway Design Manual*. The key input parameters, which determine the projected impact of vehicular traffic noise, include the lane travel speed, the percentages of automobiles, medium trucks and heavy trucks in the roadway volume, the site conditions ("hard" or "soft") and the peak hour traffic volumes.

All roadways were modeled with hard site conditions to predict the worse case future noise environment for both first and second floor receptors.

Since the Sound32 traffic noise model calculates the peak hour Leq dBA noise level, it is necessary to convert the results into CNEL values. The Leq to CNEL calculations are based on a typical vehicle distribution of over a twenty-four hour period with the appropriate noise penalties for the evening and nighttime periods. For the purpose of this analysis 80% of all vehicles were assigned during the daytime hours of 7 a.m. to 7 p.m., 7% during the evening hours of 7 p.m. to 10 p.m. and 13% during the nighttime hours of 10 p.m. to 7 a.m. Section N-2231 of the Caltrans Technical Noise Supplement outlines the procedures to calculate the CNEL values using the peak hour Leq.

6.2 Sound 32 Model Setup

To obtain the necessary coordinate information required by the Sound32 traffic noise prediction model, input data was taken using the grading plans. The preliminary grading plans provided by REC Consultants received on November 13, 2007 were used to identify the relationship between the roadway centerline elevation, the pad elevation and the centerline distance to the noise barrier, the backyard observer and at the building façade to predict the future noise environment. For modeling purposes, traffic was consolidated into a single lane located along the centerline of the road. Lane consolidation is considered an acceptable practice since the amount of error introduced by this simplification is negligible. The lanes were then subdivided into a series of contiguous segments for analysis. The nodes points on each road segment were then manually assigned an elevation using either the roadway centerline elevation or the elevation provided on the vertical roadway profile. For the purpose of this analysis, the roadway segments extend a minimum of 500 feet beyond any observer location. No grade correction (according to Caltrans Policy TAN-02-01 dated January 17, 2002) or calibration factors were included as part of the Sound32 traffic noise prediction model analysis.

To assess the study noise impacts with the development of the proposed project the outdoor observers located in noise sensitive land use areas were placed five (5) feet above the pad elevation and approximately ten (10) feet from the top of slope. All first floor observers were placed five (5) feet above the proposed finished floor elevation at the building façade with all second floor observers located fifteen (15) feet above the proposed finished floor elevation.

6.3 Traffic Noise Prediction Model Inputs

The roadway parameters including the average daily traffic volumes and vehicle speeds used for this study are presented in Table 6-1. To assess the peak hour

TABLE 6-1

ROADWAY PARAMETERS

CONDITION	(ADT)[1]	PEAK HOUR TRAFFIC VOLUMES[2]			MODELED/ OBSERVED VEHICLE SPEED[3]	POSTED VEHICLE SPEED
		AUTOS	MEDIUM TRUCKS	HEAVY TRUCKS		
HIGHWAY 8 BUSINESS ROUTE						
EXISTING	5,820	558	6	18	55	55
BUILDOUT	16,000	1,529	50	21	55	55
LOS COCHES ROAD						
BUILDOUT	21,000	2,007	66	28	55	55

[1] Average Daily Traffic (ADT) for buildout condition was based on the SANDAG 2030 traffic volumes, existing ADT was based on the traffic counts taken by Urban Crossroads Inc. on November 13, 2007.

[2] Worst case scenario assuming 10% of the ADT.

[3] Vehicle speeds were observed in the study area.

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traffic noise conditions, 10% of the ADT was used for all the study area roadways. Table 6-2 presents the hourly traffic flow distribution (vehicle mix) used for this analysis. The vehicle mix provides the hourly distribution percentages of automobile, medium trucks and heavy trucks for input into the FHWA Model. A minimal number of trucks were observed during the on-site noise measurements. However, the future traffic noise model utilizes a conservative vehicle mix of 95% Autos, 3% Medium Trucks and 2% Heavy Trucks for both analyzed roadways in order to provide a worse-case analysis.

6.4 Sound32 Modeled Scenarios

The existing conditions were modeled to compare against the noise measurements described in Section 5 of this report. It is expected that the primary source of noise impacts to the site will be traffic noise from Highway 8 Business Route and Los Coches Road. The Buildout scenario includes the future traffic volume forecasts from SANDAG's traffic prediction model for the year 2030. The analysis utilizes a worse case estimated traffic speeds of 55 mph based upon the roadway classifications of Major on Highway 8 Business Route and Collector on Los Coches Road.

TABLE 6-2

HOURLY TRAFFIC FLOW DISTRIBUTION[1]

MOTOR-VEHICLE TYPE	DAYTIME (7 AM TO 7 PM)	EVENING (7 PM TO 10 PM)	NIGHT (10 PM TO 7 AM)	TOTAL % TRAFFIC FLOW
HIGHWAY 8 BUSINESS ROUTE & LOS COCHES ROAD				
Automobiles	77.5%	12.9%	9.6%	95.00%
Medium Trucks	84.8%	4.9%	10.3%	3.00%
Heavy Trucks	86.5%	2.7%	10.8%	2.00%

[1] Typical vehicle mix utilized for both roadways

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7.0 OFF-SITE NOISE ANALYSIS

The following section outlines the methods and procedures used to model and analyze the future off-site traffic noise environment.

7.1 FHWA Traffic Noise Prediction Model

The projected roadway noise impacts from vehicular traffic were projected using a computer program that replicates the Federal Highway Administration (FHWA) Traffic Noise Prediction Model- FHWA-RD-77-108 (the "FHWA Model"). The FHWA Model arrives at a predicted noise level through a series of adjustments to the Reference Energy Mean Emission Level (REMEL). Adjustments are then made to the REMEL to account for: the roadway classification (e.g., collector, secondary, major or arterial), the roadway active width (i.e., the distance between the center of the outermost travel lanes on each side of the roadway), the total average daily traffic (ADT), the travel speed, the percentages of automobiles, medium trucks, and heavy trucks in the traffic volume, the roadway grade, the angle of view (e.g., whether the roadway view is blocked), the site conditions ("hard" or "soft" relates to the absorption of the ground, pavement, or landscaping), and the percentage of total ADT which flows each hour throughout a 24-hour period.

7.2 Traffic Noise Prediction Model Inputs

Table 7-1 presents the FHWA Traffic Noise Prediction Model roadway parameters used in this analysis. Hard site conditions were used to develop noise contours and analyze noise impacts for all receptors. The utilization of hard-site conditions will provide a worse case analysis.

Table 7-2 presents the hourly traffic flow distributions (vehicle mix) used for this analysis. The future traffic noise model utilizes a vehicle mix of 95% Autos, 3% Medium Trucks and 2% Heavy Trucks for all analyzed roadway segments. The vehicle mix provides the hourly distribution percentages of automobile, medium trucks and heavy trucks for input into the FHWA Model.

TABLE 7-1

ROADWAY PARAMETERS

ROADWAY	SEGMENT	ROADWAY CLASSIFICATION[1]	VEHICLE SPEED (MPH)
Los Coches Road	Woodside Ave. to Wellington Hill Dr.	Collector	55
Los Coches Road	Wellington Hill Dr. to Highway 8 Business	Collector	55
Los Coches Road	Highway 8 Business to Interstate 8	Collector	55
Wellington Hill Drive	West of Los Coches Rd.	Unclassified Roadway	25
Highway 8 Business	West of Project Site	Major	55
Highway 8 Business	East of Project Site	Major	55

1 According to the Traffic Impact Analysis prepared by Linscott, Law & Greenspan

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TABLE 7-2

SEGMENT ANALYSIS HOURLY TRAFFIC FLOW DISTRIBUTION

MOTOR-VEHICLE TYPE	DAYTIME (7 AM TO 7 PM)	EVENING (7 PM TO 10 PM)	NIGHT (10 PM TO 7 AM)	TOTAL % TRAFFIC FLOW
Automobiles	80.0%	7.0%	13.0%	95.00%
Medium Trucks	80.0%	7.0%	13.0%	3.00%
Heavy Trucks	80.0%	7.0%	13.0%	2.00%

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7.3 Traffic Noise Contours

To assess the off-site noise level impacts associated with development of the proposed Settlers Point Project noise contours were developed for the following traffic scenarios:

Existing: This scenario refers to the existing present-day noise conditions, without construction of the proposed project.

Existing with project: This scenario refers to the existing present-day noise conditions, with construction of the proposed project. This corresponds to the completion of the project's buildout.

Near Term With / Without Project: This scenario refers to the background noise conditions for near term conditions with and without the proposed project. This corresponds to the completion of the project's buildout plus "buffer" to include additional future cumulative developments as identified in the Settlers Point Traffic Impact Analysis.

Noise contours represent the distance to noise levels of a constant value and are measured from the center of the roadway. CNEL noise contours are determined below for the 55, 60, 65 and 70 dBA noise levels for ground floor receptors. The noise contours calculations are included in Appendix "D".

The average daily traffic volumes used for the off-site analysis in this study are presented in Tables 7-3 through 7-5. The traffic volumes were obtained from the Traffic Impact Analysis prepared by Linscott, Law & Greenspan.

The distance from the centerline of the roadway to the first floor CNEL contours for roadways in the proposed project's vicinity are also presented in Tables 7-3 through 7-5. The noise contours do not take into account the effect of any existing noise barriers or topography that may affect ambient noise levels.

TABLE 7-3

EXISTING CONDITIONS NOISE CONTOURS

ROAD	SEGMENT	AVERAGE DAILY TRAFFIC[1]	CNEL AT 100 FEET (dBA)	DISTANCE TO CONTOUR (FEET)			
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	55 dBA CNEL
Los Coches Road	Woodside Ave. to Wellington Hill Dr.	12,340	69.1	90	285	901	2,849
Los Coches Road	Wellington Hill Dr. to Highway 8 Business	17,730	70.7	129	409	1,295	4,094
Los Coches Road	Highway 8 Business to Interstate 8	19,800	71.2	145	457	1,446	4,572
Wellington Hill Drive	West of Los Coches Rd.	1,260	51.7	2	5	16	52
Highway 8 Business	West of Project Site	9,960	68.3	74	233	737	2,330
Highway 8 Business	East of Project Site	10,050	68.3	74	235	743	2,351

1 According to the Traffic Impact Analysis prepared by Linscott, Law & Greenspan

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TABLE 7-4

EXISTING WITH PROJECT CONDITIONS NOISE CONTOURS

ROAD	SEGMENT	AVERAGE DAILY TRAFFIC[1]	CNEL AT 100 FEET (dBA)	DISTANCE TO CONTOUR (FEET)			
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	55 dBA CNEL
Los Coches Road	Woodside Ave. to Wellington Hill Dr.	12,980	69.4	95	300	948	2,997
Los Coches Road	Wellington Hill Dr. to Highway 8 Business	17,900	70.7	131	413	1,307	4,133
Los Coches Road	Highway 8 Business to Interstate 8	20,760	71.4	152	479	1,516	4,794
Wellington Hill Drive	West of Los Coches Rd.	1,730	53.1	2	7	23	71
Highway 8 Business	West of Project Site	10,500	68.5	78	246	777	2,456
Highway 8 Business	East of Project Site	11,180	68.8	83	262	827	2,615

1 According to the Traffic Impact Analysis prepared by Linscott, Law & Greenspan

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TABLE 7-5

EXISTING CUMULATIVE WITH PROJECT CONDITIONS NOISE CONTOURS

ROAD	SEGMENT	AVERAGE DAILY TRAFFIC[1]	CNEL AT 100 FEET (dBA)	DISTANCE TO CONTOUR (FEET)			
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	55 dBA CNEL
Los Coches Road	Woodside Ave. to Wellington Hill Dr.	14,370	69.8	105	332	1,049	3,318
Los Coches Road	Wellington Hill Dr. to Highway 8 Business	19,330	71.1	141	446	1,411	4,463
Los Coches Road	Highway 8 Business to Interstate 8	22,770	71.8	166	526	1,663	5,258
Wellington Hill Drive	West of Los Coches Rd.	2,460	54.7	3	10	32	102
Highway 8 Business	West of Project Site	12,420	69.2	92	291	919	2,905
Highway 8 Business	East of Project Site	12,940	69.4	96	303	957	3,027

1 According to the Traffic Impact Analysis prepared by Linscott, Law & Greenspan

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7.4 Project Traffic Noise Level Contributions

Table 7-6 presents the comparison of the Existing Year with and without project noise levels shown in Tables 7-3 and 7-5. The roadway noise impacts will increase from 0.0 dBA CNEL to 1.4 dBA CNEL with the development of the proposed project. Table 7-7 presents a comparison of the Cumulative Year with and without project noise levels shown in Tables 7-4 and 7-5. The roadway noise impacts will increase from 0.4 dBA CNEL to 2.9 dBA CNEL with the development of the proposed project and the addition of the proposed cumulative projects.

7.5 Off-Site Transportation Related Project Noise Impact Analysis

Section 4 discussed the significance criteria. Roadway noise impacts would be considered significant if the project increases noise levels for a noise sensitive land use by 3 dBA CNEL and if: (1) the existing noise levels already exceed the 60 dBA CNEL residential standard, or (2) the project increases noise levels from below the 60 dBA CNEL standard to above 60 dBA CNEL in the area adjacent to the roadway segment.

The project does not create an increase of more than 3.0 dBA CNEL along any analyzed roadway as can be seen in Table 7-6. There are also no cumulative impacts of more than 3.0 dBA CNEL on any analyzed roadway. Therefore, the proposed project's contributions to off-site roadway noise increases will not cause any significant impacts to any existing or future noise sensitive land uses.

TABLE 7-6

EXISTING YEAR PROJECT CONTRIBUTIONS

ROAD	SEGMENT	DISTANCE TO 60 dBA CNEL CONTOUR			CNEL AT 100 FEET (dBA)		
		NO PROJECT	WITH PROJECT	PROJECT INCREASE	NO PROJECT	WITH PROJECT	PROJECT INCREASE
Los Coches Road	Woodside Ave. to Wellington Hill Dr.	901	948	47	69.1	69.4	0.2
Los Coches Road	Wellington Hill Dr. to Highway 8 Business	1,295	1,307	12	70.7	70.7	0.0
Los Coches Road	Highway 8 Business to Interstate 8	1,446	1,516	70	71.2	71.4	0.2
Wellington Hill Drive	West of Los Coches Rd.	16	23	7	51.7	53.1	1.4
Highway 8 Business	West of Project Site	737	777	40	68.3	68.5	0.2
Highway 8 Business	East of Project Site	743	827	84	68.3	68.8	0.5

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TABLE 7-7

EXISTING CUMULATIVE YEAR PROJECT CONTRIBUTIONS

ROAD	SEGMENT	DISTANCE TO 60 dBA CNEL CONTOUR			CNEL AT 100 FEET (dBA)		
		NO PROJECT	WITH PROJECT	PROJECT INCREASE	EXISTING NO PROJECT	NEAR TERM WITH PROJECT	PROJECT INCREASE
Los Coches Road	Woodside Ave. to Wellington Hill Dr.	901	1,049	148	69.1	69.8	0.7
Los Coches Road	Wellington Hill Dr. to Highway 8 Business	1,295	1,411	116	70.7	71.1	0.4
Los Coches Road	Highway 8 Business to Interstate 8	1,446	1,663	217	71.2	71.8	0.6
Wellington Hill Drive	West of Los Coches Rd.	16	32	16	51.7	54.7	2.9
Highway 8 Business	West of Project Site	737	919	182	68.3	69.2	1.0
Highway 8 Business	East of Project Site	743	957	214	68.3	69.4	1.1

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8.0 ON-SITE NOISE ANALYSIS

Using the FHWA traffic noise prediction model and the input parameters described in Section 6 of this report, calculations of the expected future noise impacts were completed. An analysis has been performed to determine the acoustical shielding which may be used to reduce the expected roadway noise impact for the affected noise sensitive land uses. Key input data for these barrier performance equations include the relative source-barrier-receiver horizontal separations, the relative source-barrier-receiver vertical separations, the typical noise source spectra and the barrier transmission loss. The exterior noise levels were analyzed for the existing conditions and buildout conditions.

8.1 Existing Conditions

Section N-5440 of the Caltrans Technical Noise Supplement provides detailed procedures for calibrating the Sound32 traffic noise prediction model to actual noise level measurements. The comparison is made to ensure the predicted traffic noise levels accurately reflect the actual measured noise levels. Section N-5460 suggests that model calibration should not be performed when calculated and measured noise levels agree within 1 dBA. Differences of 3.0 to 4.0 dBA may routinely be calibrated.

The modeled existing noise levels are shown on Table 8-1. Monitoring locations were modeled to compare with the noise monitoring locations presented in Table 5-1. The model is over-predicting the noise levels within 0.1 dBA when using hard-site conditions. Therefore, all roadways were modeled with hard site conditions to predict the future noise environment for both first and second floor receptors. The calibration factor based on the noise measurement data described in Chapter 5 was not included as part of the buildout analysis. The model input parameters for calibration can be seen in Appendix "E".

TABLE 8-1

EXISTING NOISE LEVELS (MODELED)

RECEPTOR	RECEPTOR DESCRIPTION	dBA Leq
1	Monitoring Location 1	68.0

[1] Noise monitoring locations included in the model for existing conditions to compare with the measured noise results presented in Table 5-1.

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8.2 Traffic Noise Contours

Noise contours are lines that drawn around a noise source indicating a constant or equal level of noise exposure. Noise contour boundaries are generally used as a planning tool to assess the need for additional analysis.

The noise contour boundaries were developed for unmitigated future Buildout conditions. No barriers were included as part of the noise contour analysis. The Sound32 traffic noise prediction model was used to calculate a reference noise level for observers perpendicular to Highway 8 Business Route. Exhibit 8-A provides the location of the first and second floor 75 and 60 dBA CNEL noise contour boundaries.

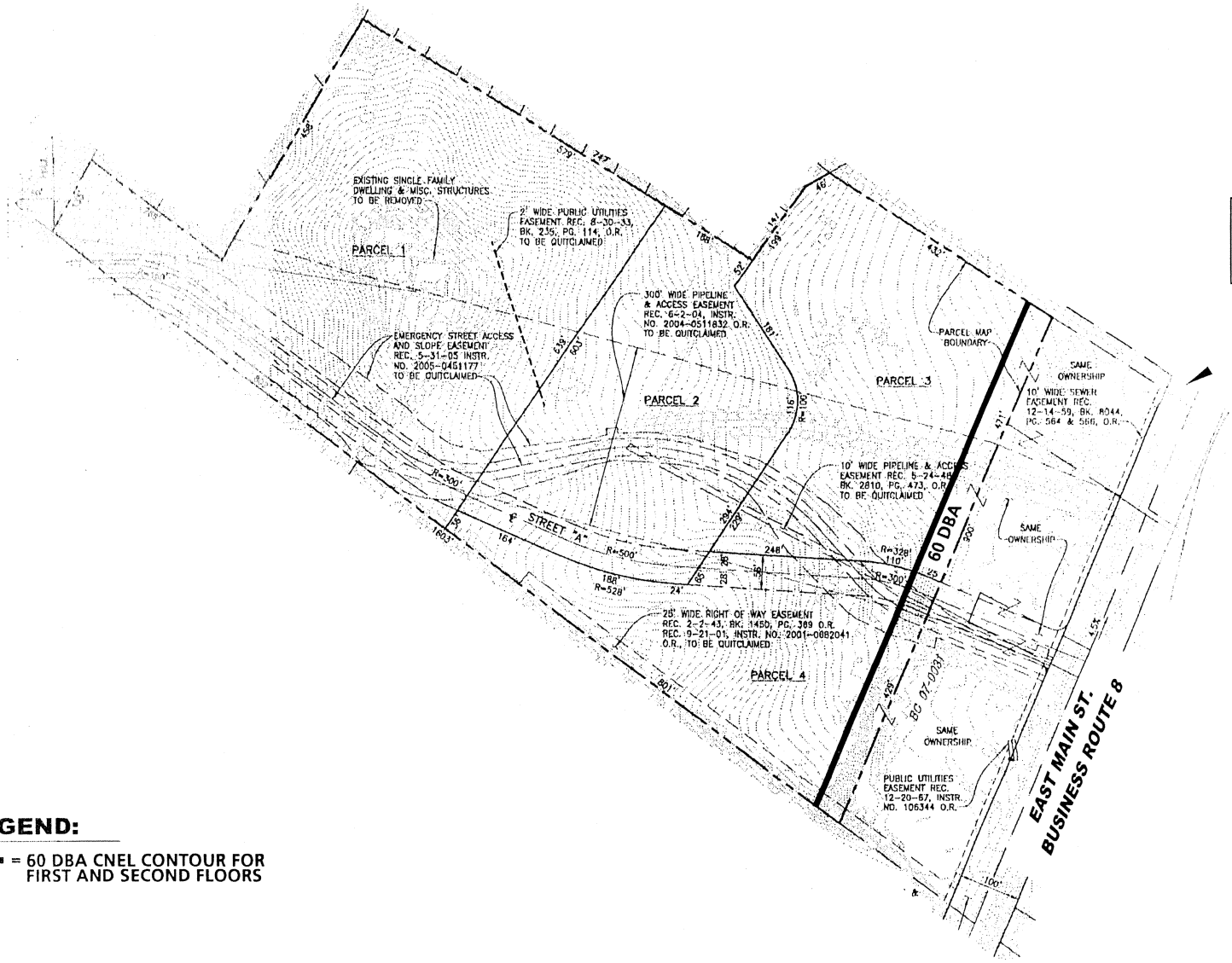
The noise contours shown on Exhibit 8-A show that the 75 dBA CNEL contours are all located within the public right-of-way. Portions of the proposed site will exceed the County of San Diego 60 dBA CNEL exterior noise standard for unmitigated conditions. Based on this finding, additional detailed exterior noise analysis was performed for each parcel. The distances to the 60 dBA CNEL contour for the first and second floors of each planning area are provided in Table 8-2.

8.3 Buildout Scenario Exterior Noise Analysis

The buildout analysis was modeled assuming future Year 2030 traffic volumes along Highway 8 Business Route and Los Coches Road. The roadways are modeled with a worse case design speed of 55 miles per hour. The edges of roadway were also included in the model for this scenario. The building layouts for each parcel have not been determined at this time. Exterior noise levels will exceed the County of San Diego 60 dBA CNEL standard for residential developments in the portions of Parcels 3 & 4 located within 25 feet of the edges of pads. If noise sensitive land uses are located in these portions, a 4-foot noise barrier may be required along the edge of pad facing Highway 8 Business Route. The barrier must

EXHIBIT 8-A

NOISE CONTOURS



75 DBA CONTOURS LOCATED WITHIN THE PUBLIC RIGHT-OF-WAY

LEGEND:

▬ = 60 DBA CNEL CONTOUR FOR FIRST AND SECOND FLOORS

N

URBAN CROSSROADS

TABLE 8-2

LOTS LOCATED WITHIN 60 dBA CNEL CONTOUR[1]

LOCATION	DISTANCE TO FIRST AND SECOND FLOOR HIGHWAY 8 BUSINESS ROUTE 60 dBA CONTOUR (FEET)	AFFECTED PORTIONS REQUIRING MITIGATION
PARCEL 4	285	25 feet from the edge of pad
PARCEL 3	285	25 feet from the edge of pad

[1] Graphic provided as Exhibit 8-A

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be constructed of a non-gapping material. Once the building layouts are determined for Parcels 3 & 4, a noise analysis must be completed to verify the exterior noise levels and required mitigation measures.

Exhibit 1-A shows the mitigation and barrier heights which may be required to bring future noise levels to the County of San Diego 60 dBA CNEL exterior noise level standard for Parcels 3 & 4. Modeled observer locations for the project are presented in Exhibit 8-B. The results of the unmitigated and mitigated exterior areas are shown in Table 8-3.

8.4 Buildout Scenario Interior Noise Analysis

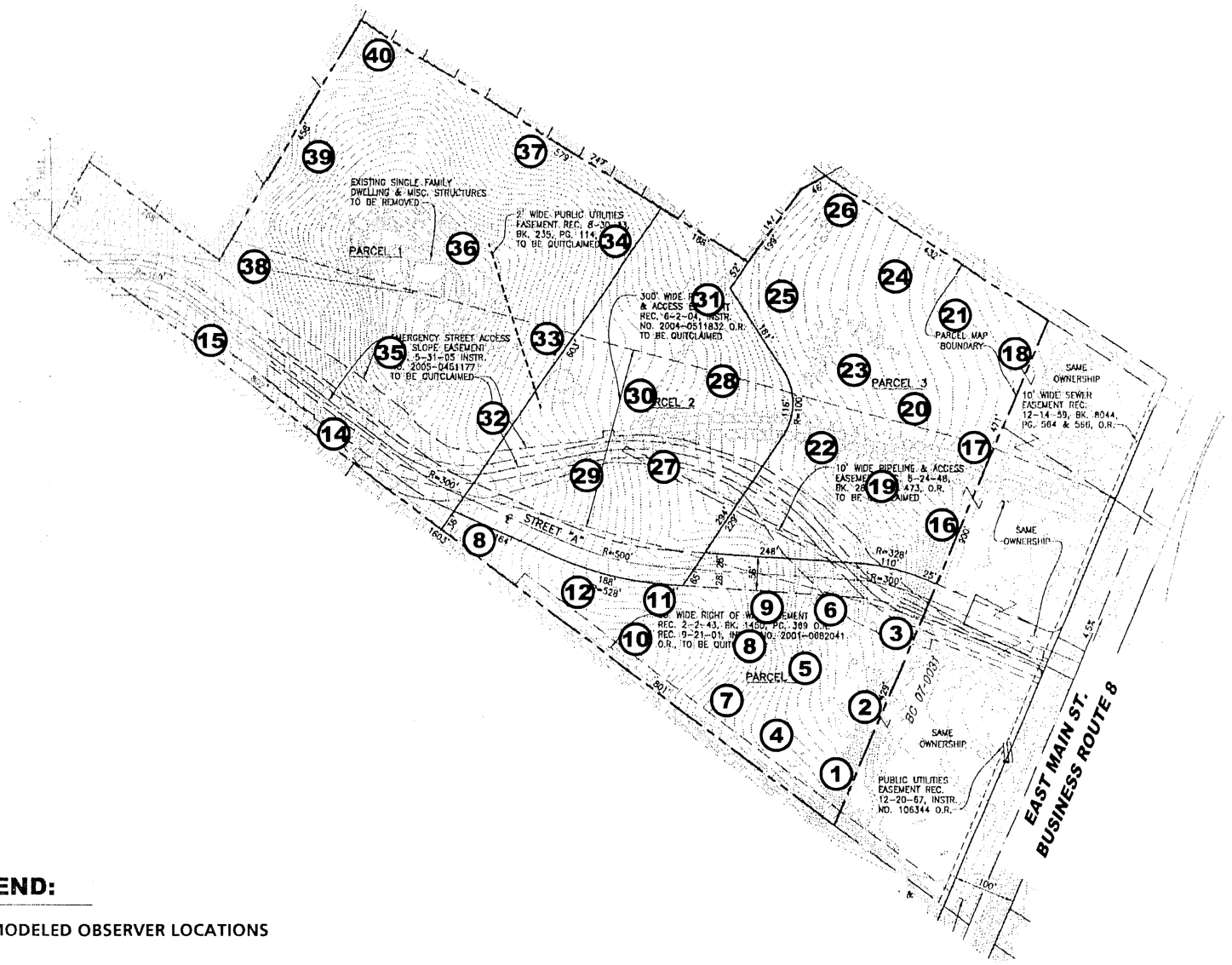
Noise levels were calculated for first and second floor receptors in all four parcels. These levels will need to be utilized to determine interior mitigation once architectural plans are finalized. The building façade levels for all four floors of the project site are provided in Table 8-2. Noise levels at the second floors of the portions of Parcels 3 & 4 located within 25 feet of the edges of pads were found to be above the General Plan Noise Element Standard, of 60 dBA CNEL. Therefore, interior mitigation for these lots is required to obtain an interior level of 45 dBA CNEL. It should be noted; interior noise levels can easily be obtained with typical building construction methods and the follow recommendations:

- Provide a "windows closed" condition requiring a means of mechanical ventilation (e.g. air conditioning) for the second floors of all noise sensitive land uses located within 25 feet of the edges of pads for Parcels 3 & 4.
- Provide upgraded windows for the second floors of all noise sensitive land uses located within 25 feet of the edges of pads for Parcels 3 & 4.

A final noise study shall be prepared upon completion of the building layout design for Parcels 3 & 4 which will verify interior noise levels and determine required

EXHIBIT 8-B

MODELED OBSERVER LOCATIONS



LEGEND:

(1) = MODELED OBSERVER LOCATIONS

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URBAN CROSSROADS

TABLE 8-3

BUILDOUT CONDITIONS EXTERIOR NOISE LEVELS (dBA CNEL)

RECEPTOR NUMBER	RECEPTOR LOCATION	UNMITIGATED GROUND FLOOR EXTERIOR NOISE LEVEL	MITIGATED GROUND FLOOR EXTERIOR NOISE LEVEL	SECOND FLOOR WITH BARRIERS EXTERIOR NOISE LEVEL	BARRIER HEIGHT (IN FEET)[1]
1	PARCEL 4	59.2	58.6	59.6	4.0
2	PARCEL 4	59.7	60.4	61.1	4.0
3	PARCEL 4	60.7	59.8	62.3	4.0
4	PARCEL 4	57.8	58.0	58.5	0.0
5	PARCEL 4	58.3	56.1	58.5	0.0
6	PARCEL 4	58.7	55.2	56.9	0.0
7	PARCEL 4	56.7	54.3	56.5	0.0
8	PARCEL 4	57.1	53.7	55.0	0.0
9	PARCEL 4	57.7	53.2	54.6	0.0
10	PARCEL 4	55.7	52.5	54.7	0.0
11	PARCEL 4	56.2	52.4	53.2	0.0
12	PARCEL 4	55.1	53.7	53.9	0.0
13	PARCEL 4	54.3	53.2	53.4	0.0
14	PARCEL 4	53.4	52.1	52.3	0.0
15	PARCEL 4	52.2	51.5	51.3	0.0
16	PARCEL 3	61.9	59.7	64.8	4.0
17	PARCEL 3	65.1	59.5	64.9	4.0
18	PARCEL 3	65.3	59.7	65.3	4.0
19	PARCEL 3	59.5	54.5	56.9	0.0
20	PARCEL 3	60.2	54.1	56.8	0.0
21	PARCEL 3	61.1	56.7	61.4	0.0
22	PARCEL 3	58.4	52.9	54.3	0.0
23	PARCEL 3	59.1	53.6	55.5	0.0
24	PARCEL 3	60.1	59.6	59.9	0.0
25	PARCEL 3	58.1	53.8	55.6	0.0
26	PARCEL 3	59.2	58.5	58.6	0.0
27	PARCEL 2	57.0	53.8	54.7	0.0
28	PARCEL 2	57.6	54.5	55.2	0.0
29	PARCEL 2	55.6	53.2	53.6	0.0
30	PARCEL 2	56.2	53.7	54.4	0.0
31	PARCEL 2	57.1	55.2	55.8	0.0
32	PARCEL 1	54.9	53.7	53.9	0.0
33	PARCEL 1	55.5	54.4	54.8	0.0
34	PARCEL 1	56.4	55.9	55.9	0.0
35	PARCEL 1	54.0	53.5	53.6	0.0
36	PARCEL 1	54.5	54.1	54.2	0.0
37	PARCEL 1	55.3	55.1	55.1	0.0
38	PARCEL 1	53.0	52.9	53.0	0.0
39	PARCEL 1	53.6	53.4	53.5	0.0
40	PARCEL 1	54.2	54.1	54.2	0.0

[1] Barrier height in feet above pad or roadway elevation, whichever is greater to achieve maximum insertion loss.

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mitigation measures. This report would finalize the noise requirements based upon precise grading plans and actual building design specifications. The Sound32 input decks for first and second floor future year 2030 conditions are provided in Appendix "F".

8.5 Noise Control Barrier Construction Materials

If mitigation is determined to be required, the designed noise screening may only be accomplished if the barriers weight is at least 3.5 pounds per square foot of face area and have no decorative cutouts or line-of-site openings between shielded areas and the roadways. The recommended noise control barrier may be constructed using one of the following alternative materials:

1. Masonry block;
2. Stucco veneer over wood framing (or foam core), or 1 inch thick tongue and groove wood of sufficient weight per square foot;
3. Glass (1/4 inch thick), or other transparent material with sufficient weight per square foot;
4. Earthen berm;
5. Any combination of these construction materials.

Barriers must utilize ¼ thick glass or an equivalent transparent material to meet the required noise mitigations measures. The recommended barrier must present a solid face from top to bottom. Unnecessary openings or decorative cutouts should not be made. All gaps (except for weep holes) should be filled grout or caulking.

9.0 SHORT-TERM CONSTRUCTION NOISE IMPACTS

Construction noise represents a short-term impact on the ambient noise levels. Noise generated by construction equipment, including trucks, graders, bulldozers, concrete mixers and portable generators can reach high levels. Grading activities typically represent one of the highest potential sources for noise impacts. The most effective method of controlling construction noise is through local control of construction hours and by limiting the hours of construction to normal weekday working hours.

9.1 Construction Related Noise Levels

The U.S. Environmental Protection Agency (U.S. EPA) has compiled data regarding the noise generating characteristics of specific types of construction equipment. Noise levels generated by heavy construction equipment can range from approximately 60 dBA to noise levels in excess of 100 dBA when measured at 50 feet. However, these noise levels diminish rapidly with distance from the construction site at a rate of approximately 6 dBA per doubling of distance. For example, a noise level of 68 dBA measured at 50 feet from the noise source to the receptor would be reduced to 62 dBA at 100 feet from the source to the receptor, and would be further reduced to 56 dBA at 200 feet from the source to the receptor.

9.2 Construction Noise Level Impact Analysis

Using a point-source noise prediction model, calculations of the expected construction noise impacts were completed. Key input data for these barrier performance equations include the relative source to receiver horizontal separations, the relative source to receiver vertical separations, the typical noise source spectra and any barrier transmission loss.

Noise levels generated during the grading activity will not affect the adjacent residential uses surrounding the site. The project will utilize equipment such as four excavators, six scrapers and two water trucks. Using a reference sound level at fifty-feet of 75 dBA, 73 dBA and 80 dBA for each of the three types of equipment, respectively, results in a cumulative sound level of 88.8 dBA at 50 feet. At the nearest homes located east of the project approximately three hundred feet from the project site boundary, the noise impacts will be lower than 75 dBA Leq, considering a drop-off rate of 6 dBA per doubling distance. The results of the construction noise analysis are provided in Table 9-1.

Although construction noise would result in a short-term increase greater than 5 dBA over ambient noise levels, construction noise is of short-term duration and will not present any long-term impacts on the project site or the surrounding area.

TABLE 9-1

CONSTRUCTION NOISE LEVELS (dBA)

EQUIPMENT TYPE	QUANTITY	TIME OF OPERATION (HOURS)	SOURCE LEVEL AT 50 FEET (dBA) [1]	CUMULATIVE LEVEL AT 50 FEET (dBA)
Dozer/Excavator	4	8	75	81.0
Water Trucks	2	8	73	76.0
Scraper	6	8	80	87.8
		CUMULATIVE LEVELS AT 50 FEET (dBA)		88.8
		DISTANCE TO PROPERTY LINE		300
		NOISE REDUCTION DUE TO DISTANCE		-15.6
		PROPERTY LINE NOISE LEVEL		**73.3**

[1] Reference Levels Provided by Environmental Protection Agency (EPA), 1971.

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APPENDIX A

COUNTY OF SAN DIEGO NOISE STANDARDS

COUNTY OF SAN DIEGO

GUIDELINES FOR DETERMINING SIGNIFICANCE AND REPORT FORMAT AND CONTENT REQUIREMENTS

NOISE

LAND USE AND ENVIRONMENT GROUP

Department of Planning and Land Use
Department of Public Works

November 15, 2006

DRAFT

APPROVAL

I hereby certify that these **Guidelines for Determining Significance and Report Format and Content Requirements for Noise** are a part of the County of San Diego, Land Use and Environment Group's Guidelines for Determining Significance and Technical Report Format and Content Requirements and were considered by the Director of Planning and Land Use, in coordination with the Director of Public Works on the 26th day of September, 2006.

GARY PRYOR
Director of Planning and Land Use

JOHN SNYDER
Director of Public Works

Attest: ERIC GIBSON
Deputy Director of Planning and Land Use

I hereby certify that these **Guidelines for Determining Significance and Report Format and Content Requirements for Noise** are a part of the County of San Diego, Land Use and Environment Group's Guidelines for Determining Significance and Technical Report Format and Content Requirements and have hereby been approved by the Deputy Chief Administrative Officer (DCAO) of the Land Use and Environment Group on the 26th day of September, 2006. The Director of Planning and Land Use is authorized to approve revisions to these Guidelines for Determining Significance and Report Format and Content Requirements for Noise except any revisions to the Guidelines for Determining Significance presented in Chapter 4.0 must be approved by the Deputy CAO.

Approved, September 26, 2006

CHANDRA WALLAR
Deputy CAO

COUNTY OF SAN DIEGO

GUIDELINES FOR DETERMINING SIGNIFICANCE

NOISE

LAND USE AND ENVIRONMENT GROUP

Department of Planning and Land Use
Department of Public Works

November 15, 2006

EXPLANATION

These Guidelines for Determining Significance for Noise and information presented herein shall be used by County staff for the review of discretionary projects and environmental documents pursuant to the California Environmental Quality Act (CEQA). These Guidelines present a range of quantitative, qualitative, and performance levels for particular environmental effects. Normally, (in the absence of substantial evidence to the contrary), non-compliance with a particular standard stated in these Guidelines will mean the project will result in a significant effect, whereas compliance will normally mean the effect will be determined to be "less than significant." Section 15064(b) of the State CEQA Guidelines states:

> "The determination whether a project may have a significant effect on the environment calls for careful judgment on the part of the public agency involved, based to the extent possible on factual and scientific data. An ironclad definition of significant effect is not always possible because the significance of an activity may vary with the setting."

These Guidelines assist in providing a consistent, objective and predictable evaluation of significant effects. These Guidelines are not binding on any decision-maker and should not be substituted for the use of independent judgment to determine significance or the evaluation of evidence in the record. The County reserves the right to modify these Guidelines in the event of scientific discovery or alterations in factual data that may alter the common application of a Guideline.

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List of Acronyms

ANSI	American National Standards Institute
CALTRANS	California Department of Transportation
CEQA	California Environmental Quality Act
CNEL	Community Noise Exposure Level
dB	Decibel
DNL	Day-Night Average Sound Level
DPLU	Department of Planning and Land Use
VdB	Vibration velocity level in decibels
dBA	A-weighted Sound Pressure Level
FAA	Federal Aviation Administration
FHWA	Federal Highway Administration
HVAC	Heating, Ventilation, and Air Conditioning
Hz	Hertz
ISO	International Organization for Standardization
Ldn	Day-Night Average Sound Level
Leq	Equivalent Sound Level
Leq(h)	One-Hour Equivalent Noise Level
NSLU	Noise Sensitive Land Use

INTRODUCTION

This document provides guidance for evaluating ~~adverse~~any substantial environmental effects that a proposed project may have from noise. Specifically, this document aids in addressing the following questions listed in the California Environmental Quality Act (CEQA) Guidelines, Appendix G, XI. Noise:

Would the project:

a) Result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

b) Result in exposure of persons to or generation of excessive ground borne vibration or ground borne noise levels?

c) Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

d) Result in a substantial temporary[1] or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

Depending on intensity, frequency, duration and other factors, noise can affect human health and quality of life. Noise problems can manifest themselves in two general ways:

- The absolute level of noise can generate impacts to existing or reasonably forseeable future noise sensitive land uses[1]; or
- A substantial increase to the ambient noise levels existing before project implementation can generate impacts to preexisting noise sensitive land uses.

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[1]Temporary – any activities lasting less than or equal to 1 month in duration dependent on the site and situation (i.e., fixed or mobile sources, proximity to other land uses, and type of noise source).

[1]2-Noise Sensitive Land Uses – any residence, hospital, school, hotel, resort, library, or similar facility where quiet is an important attribute of the environment.

There are a number of noise level standards in existing Federal, State, and local regulations. The County of San Diego has two principal noise regulations, the Noise Element of the General Plan and the Noise Ordinance. The Noise Element of the General Plan establishes sound level limits for noise received at noise sensitive land uses. It identifies the major sources of noise to be airports and traffic on public roadways. The Noise Ordinance establishes sound level limits for noise sources. In addition, there are other Federal, State and local regulations that address airport and federally funded highway noise.

1.0 ENVIRONMENTAL NOISE: TERMS, GENERAL PRINCIPLES, AND EXISTING CONDITIONS

1.1 Terms

Environmental noise is comprised of infinite combinations of sound intensities of varying frequency and duration. In order to reasonably characterize environmental noise the following weighted and averaging terms are utilized:

1.1.1 A-weighted Sound Pressure Level (dB or dBA)

Some frequencies of noise are more noticeable than others. To compensate for this fact, different sound frequencies are weighted more heavily (A-weighted) so that the response of the average human ear is simulated.

1.1.2 Equivalent Sound Level (Leq)

Environmental noise often fluctuates over time. To be able to describe this in a practicable manner the Leq was developed. Leq is the A-weighted steady sound level that contains the same total acoustical energy as the actual fluctuating sound level.

1.1.3 One-Hour Equivalent Noise Level (Leq(h))

A one-hour equivalent noise level is a measurement of noise intensity, which is the equivalent sound level (Leq) over one hour averaging period.

1.1.4 Community Noise Equivalent Level (CNEL)

This term applies weights to noise during evening and nighttime hours to compensate for the increased sensitivity to noise. CNEL is the equivalent sound level for a 24-hour period with a +5 dB weighting applied to all sound occurring between 7:00 p.m. and 10:00 p.m. and a + 10 dB weighting applied to all sound occurring between 10:00 p.m. and 7:00 a.m. CNEL is expressed in the A-weighting frequency scale. In the case of airport or aircraft noise, CNEL is often expressed as a 365-day average.

1.1.5 Day-Night Average Sound Level (DNL)

This term is similar to CNEL except it does apply any weights to the evening hours to compensate for the increased sensitivity to noise. DNL is a 24-hour weighted average

and also uses an A-weighted frequency scale. DNL is normally within 1 dB of CNEL using the same 24-hour data.

1.2 General Principles and Existing Conditions

Noise is typically defined as unwanted sound. The main characteristics of sound are intensity, frequency and duration. The decibel (dB) is the typical measurement of sound intensity. A sound level of 0 dB approximates the threshold of hearing for people. Sound levels of typical community noise sources and community noise environment are illustrated in Table 6. However, the average person can perceive a change of +/-3 dB. A change of +/-5 dB is readily perceptible and a change of +10 dB is perceived as twice as loud. Noise can have both human health and quality of life effects. At 130 to 140 dB, sound becomes extremely painful to the average person. Data shows that long exposure to noise levels exceeding 85 dB can result in hearing loss and other health-related problems (OSHA, 2006). The community noise environment is normally unacceptable for residential sites that are exposed to noise where the day-night average sound level (DNL) exceeds 75 decibels (HUD, 1991). From a quality of life standpoint, noise can interfere with speech, disturb sleep and cause annoyance. Table 7 reflects the results of studies on the relationship between noise exposure and percentage of community highly annoyed by noise. The studies demonstrated that approximately four percent (4%) of a community is highly annoyed by community noise levels equivalent to 55 dB CNEL, and about fourteen percent (14%) of a community can be highly annoyed by community noise levels equivalent to 65dB CNEL. Additionally, an increase in the ambient or periodic noise level can cause quality of life impacts even when the absolute noise level does not exceed 55-65 dB CNEL. A study by the International Standard Organization (ISO) found that sound level changes of 5-10 dB generated sporadic complaints from existing residents. Changes of 10 dB or more generated widespread complaints.

Frequency of sound is measured in Hertz (Hz) or cycles per second. The generally accepted range of human hearing ranges from approximately a low of 20 Hz to a high of 20,000 Hz. Some frequencies are more noticeable and annoying than others.

When compared to most other environmental issues, noise level standards are comprehensive in existing Federal, State, and local regulations. These standards are generally the result of socioeconomic studies that balance quality of life issues with reasonable development needs. This association is shown in Table 7, "Relationship Between Noise Exposure and Percentage of Community Highly Annoyed."

2.0 EXISTING REGULATIONS AND STANDARDS

Due to the human health and quality of life concerns addressed above, Federal, State, and local agencies have established limits for community noise and occupational noise. These allowable sound level limits are established based on psycho-acoustical and health considerations as well as socioeconomic and technical considerations. The County of San Diego has two principal noise regulations, the Noise Element of the

General Plan and the Noise Ordinance. The following summarizes the salient aspects of these regulations and other regulations that typically apply to projects within the unincorporated area of San Diego County.

2.1 Federal Regulations and Standards

Federal Aviation Administration (FAA) Standards [FAR Part 150, Section 150.21]
The FAA establishes 65 dB CNEL as the noise standard associated with aircraft noise. This standard is also generally applied to railroad noise.

Federal Highway Administration (FHWA) Standards [23 CFR Chapter 1, Part 772, Section 772.19]
For federally funded road construction projects, the Federal Highway Administration (FHWA) standards preempt County standards. The FHWA establishes a 67 dB standard to federal highway projects.

Federal Railroad Administration (FRA) Standards [High-speed Ground Transportation and Vibration Impact Assessment Manual, August 2005, http://www.fra.dot.gov/downloads/RRDev/final_nv.pdf]
For high-speed ground transportation (HSGT) projects, responsible agencies require methods in this manual for NEPA evaluation of a project's potential impacts considering the adjacent land uses categories (Table 9), existing ambient conditions, and future exposure levels. The assessment provides methods to assist in the evaluation of high-speed designs in contrast to more standard mass transit developments. For a federally funded project, the Federal Railroad Administration (FRA) standards preempt County standards.

Federal Transit Authority Standards (FTA) [Transit Noise and Vibration Impact Assessment, Manual, May 2006,http://www.fta.dot.gov/documents/FTA_Noise_and_Vibration_Manual.pdf]
For federally funded mass transit projects, the Federal Transit Authority (FTA) standards preempt County standards. The County currently relies on the vibration standards listed in this document.

2.2 State Regulations and Standards

California Environmental Quality Act (CEQA) [California Code of Regulations, Guidelines for Implementation of CEQA, Appendix G, Title 14, Chapter 3 §15000-15387 and 21000-21178, http://ceres.ca.gov/topic/env_law/ceqa/guidelines/]
Under the California Environmental Quality Act (CEQA), lead agencies are required to consider noise impacts. Under CEQA, lead agencies are directed to assess conformance to locally established noise standards or other agencies' noise standards; measure and identify the potentially significant exposure of people to or generation of excessive ground borne vibration or noise levels; measure and identify potentially significant permanent or temporary increases in ambient noise levels; and measure and identify potentially significant impacts associated with air traffic.

California Noise Control Act [California Health and Safety Code 46000-46080 http://www.leginfo.ca.gov/calaw.html]

This section of the California Health and Safety Code finds that excessive noise is a serious hazard to the public health and welfare and that exposure to certain levels of noise can result in physiological, psychological, and economic damage. It also finds that there is a continuous and increasing bombardment of noise in the urban, suburban, and rural areas. The California Noise Control Act declares that the State of California has a responsibility to protect the health and welfare of its citizens by the control, prevention, and abatement of noise. It is the policy of the State to provide an environment for all Californians free from noise that jeopardizes their health or welfare.

California Noise Insulation Standards [California's Title 24 Noise Standards. Cal. Adm. Code Title 24, Chap. 2-35 http://ccr.oal.ca.gov/]
In 1974, the California Commission on Housing and Community Development adopted noise insulation standards for multi-family residential buildings (Title 24, Part 2, California Code of Regulations). Title 24 establishes standards for interior room noise (attributable to outside noise sources). The regulations also specify that acoustical studies must be prepared whenever a residential building or structure is proposed to be located near an existing or adopted freeway route, expressway, parkway, major street, thoroughfare, rail line, rapid transit line, or industrial noise source, and where such noise source or sources create an exterior CNEL (or Ldn) of 60 dB or greater. Such acoustical analysis must demonstrate that the residence has been designed to limit intruding noise to an interior CNEL (or Ldn) of at least 45 dB.

2.3 Local Regulations and Standards

San Diego County General Plan, Noise Element, (Part VIII)
[http://ceres.ca.gov/planning/counties/San_Diego/plans.html]
The Noise Element of the County of San Diego General Plan establishes limitations on sound levels to be received by noise sensitive land uses (NSLUs). New development may cause an existing NSLU to be affected by noise caused by the new development, or it may create or locate a NSLU in such a place that it is affected by noise. The Noise Element identifies airports and traffic on public roadways as the major sources of noise.

The Noise Element states that, if it appears that a NSLU would be subject to noise levels of CNEL equal to 60 decibels (A) or greater, an acoustical study is required. If that study confirms that greater than 60 dB CNEL would be experienced, modifications must be made to the development which reduce the exterior noise level to less than 60 dB CNEL and the interior noise levels to below 45 dB CNEL. If these modifications are not made, the development shall not be approved unless a finding is made that specific social or economic considerations warrant project approval; provided, that if the noise level would exceed 75 dB CNEL(A) even with such modifications, the development shall not be approved irrespective of such social or economic considerations.

"CNEL" is the Community Noise Equivalent Level, which is a 24-hour averaged measurement based upon the "(A)" or A-weighted sound levels, with certain penalties assigned to evening and nighttime noise, as described in Chapter 2 of the Noise Element. "Development" is defined as any physical development including but not limited to residences, commercial or industrial facilities, roads, civic buildings, hospitals,

schools and airports. A "NSLU" is defined as any residence, hospital, school, hotel, resort, library, or any other facility where quiet is an important attribute of the environment. "Exterior Noise" means noise measured at an outdoor living area that meets specified minimum area requirements for single family detached dwelling projects, and for other projects it means noise measured at all exterior areas which are provided for group or private usable open space.

The Noise Element includes special provisions for County road construction projects and interior noise levels in rooms that are usually occupied only a part of the day (schools, libraries, etc.).

County of San Diego Noise Ordinance [San Diego County Code of Regulatory Ordinances. Title 3. Division 6. Chapter 4. Section 36.401
http://www.sdcounty.ca.gov/dplu/Resource/docs/3~pdf/NoiseOrdinance.pdf]
The County of San Diego Noise Ordinance establishes prohibitions for disturbing, excessive, or offensive noise and provisions such as sound level limits for the purpose of securing and promoting the public health, comfort, safety, peace, and quiet for its citizens. Planned compliance with sound level limits and other specific parts of the ordinance allows presumption that the noise is not disturbing, excessive, or offensive. Limits are specified depending on the zoning placed on a property (e.g., varying densities and intensities of residential, industrial and commercial zones). Where two adjacent properties have different zones, the sound level limit at a location on a boundary between two properties is the arithmetic mean of the respective limits for the two zones, except for extractive industries. It is unlawful for any person to cause or allow the creation of any noise that exceeds the applicable limits of the Noise Ordinance at any point on or beyond the boundaries of the property on which the sound is produced. Furthermore, the Noise Ordinance allows the County to grant variances from the noise limitations, subject to terms and conditions intended to achieve compliance. Finally, the Noise Ordinance establishes additional noise limitations for operation of construction equipment.

3.0 TYPICAL ADVERSE EFFECTS

Typical noise-related adverse effects associated with new development projects generally fall into the following categories:

3.1 Construction Activities

- Exposure of on- or off- site areas to noise associated with project-related construction activities including but not limited to; site grading, truck/construction equipment movement, engine noise, rock excavation, crushing, and blasting.

3.2 Operational Activities

- Exposure of on- or off- site areas to increased noise associated with operation of projects including but not limited to; mechanical equipment (pumps, rooftop equipment, condenser units, A/C units, pneumatic equipment), operation related

traffic (vehicle movement, engine noise), outdoor human activity in defined limited areas, speakers, bells, and chimes.

3.3 Noise Sensitive Land Uses (NSLUs)

- Exposure of NSLUs to existing and future noise from all sources, particularly roads and highways, railroads, airports, heliports or extractive industries. This includes noise caused by new development, impacting existing or forseeable future NSLUs. It also includes new development which creates or locates NSLUs in such a place that they are impacted by noise (a typical example being a new residential project locating residences in close proximity to a highway).

4.0 GUIDELINES FOR DETERMINING SIGNIFICANCE

The following Guidelines shall be applied in determining significance of potential noise impacts:

Exceedance of any one of the following standards will generally be considered a significant impact related to noise as a result of project implementation, in the absence of substantial evidence to the contrary:

4.1 Noise Sensitive Land Uses Affected By Airborne Noise

Project implementation will result in the exposure of any on- or off-site, existing or reasonably foreseeable future NSLU to exterior or interior noise (including noise generated from the project, together with noise from roads, railroads, airports, heliports and all other noise sources) in excess of any of the following:

A. Exterior Locations:

i. 60 dB (CNEL); or

ii. An increase of 10 dB (CNEL) over pre-existing noise.

In the case of single-family residential detached NSLUs, exterior noise shall be measured at an outdoor living area which adjoins and is on the same lot as the dwelling, and which contains at least the following minimum area:

(1) Net lot area up to 4,000 sq. ft.:	*400 square feet*
(2) Net lot area 4,000 sq. ft. to 10 ac.:	*10% of net lot area*
(3) Net lot area over 10 ac.:	*1 ac.*

For all other projects, exterior noise shall be measured at all exterior areas provided for group or private usable open space.

B. Interior Locations:

45 dB (CNEL) except for the following cases:

i. Rooms which are usually occupied only a part of the day (schools, libraries, or similar facilities), the interior one-hour average sound level due to noise outside should not exceed 45 decibels (A).

ii. Corridors, hallways, stairwells, closets, bathrooms, or any room with a volume less than 490 cubic feet.

4.2 Project – Generated Airborne Noise

The project will generate airborne noise which, together with noise from all sources, will be in excess of either of the following:

A. Non-Construction Noise: The limit specified in San Diego County Code Section 36.404, Sound Level Limits, at or beyond the property line. Section 36.404 provides the following limits:

Table 2
San Diego County Code Section 36.404, Sound Level Limits

ZONE		APPLICABLE LIMIT ONE-HOUR AVERAGE SOUND LEVEL (DECIBELS)
R-S, R-D, R-R, R-MH, A-70, A-72, S-80, S-81, S-87, S-88, S-90, S-92, R-V, and R-U Use Regulations with a density of less than 11 dwelling units per acre.	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	50 45
R-RO, R-C, R-M, C-30, S-86, R-V, R-U and V5. Use Regulations with a density of 11 or more dwelling units per acre.	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	55 50
S-94, V4, and all other commercial zones.	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	60 55
V1, V2 V1, V2 V1 V2	7 a.m. to 7 p.m. 7 p.m. to 10 p.m. 10 p.m. to 7 a.m. 10 p.m. to 7 a.m.	60 55 55 50
V3	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	70 65
M-50, M-52, M-54	Anytime	70
S-82, M-58, and all other industrial zones.	Anytime	75

If the measured ambient level exceeds the applicable limit noted above, the allowable one hour average sound level shall be the ambient noise level. The ambient noise level shall be measured when the alleged noise violation source is not operating.

The sound level limit at a location on a boundary between two (2) zoning districts is the arithmetic mean of the respective limits for the two districts; provided however, that the one-hour average sound level limit applicable to extractive industries, including but not limited to borrow pits and mines, shall be 75 decibels at the property line regardless of the zone where the extractive industry is actually located.

Fixed-location public utility distribution or transmission facilities located on or adjacent to a property line shall be subject to the noise level limits of this section, measured at or beyond six (6) feet from the boundary of the easement upon which the equipment is located.

B. Construction Noise: Noise generated by construction activities related to the project will exceed the standards listed in San Diego County Code Section 36.410, Construction Equipment.

Section 36.410 states:

Except for emergency work,

(a) It shall be unlawful for any person to operate construction equipment between the hours of 7 p.m. of any day and 7 a.m. of the following day.

(b) It shall also be unlawful for any person to operate construction equipment on Sundays, and days appointed by the President, Governor, or the Board of Supervisors for a public fast, Thanksgiving, or holiday, but a person may operate construction equipment on the above-specified days between the hours of 10 a.m. and 5 p.m. at his residence or for the purpose of constructing a residence for himself, provided that the average sound level does not exceed 75 decibels during the period of operation and that the operation of construction equipment is not carried out for profit or livelihood.

(c) It shall also be unlawful to operate any construction equipment so as to cause at or beyond the property line of any property upon which a legal dwelling unit is located an average sound level greater than 75 decibels between the hours of 7 a.m. and 7 p.m.
(Amended by Ord. No. 9700 (N.S.), effective 2-4-05)

For temporary activities, the County considers the 75 decibel (A) average to be based on a period of one hour.

4.3. Groundborne Vibration and Noise Impacts

Project implementation will expose the uses listed in Table 3 and 4 to ground-borne vibration or noise levels equal to or in excess of the levels shown:

Table 3
Guidelines of Significance for
Groundborne Vibration and Noise Impacts

Land Use Category	Ground-Borne Vibration Impact Levels (inches/sec rms)		Ground-Borne Noise Impact Levels (dB re 20 micro Pascals)	
	Frequent Events[1]	Infrequent Events[2]	Frequent Events[1]	Infrequent Events[2]
Category 1: Buildings where low ambient vibration is essential for interior operations. (research & manufacturing facilities with special vibration constraints)	0.0018 [3]	0.0018 [3]	Not applicable[5]	Not applicable[5]
Category 2: Residences and buildings where people normally sleep. (hotels, hospitals, residences, & other sleeping facilities)	0.0040	0.010	35 dBA	43 dBA
Category 3: Institutional land uses with primarily daytime use. (schools, churches, libraries, other institutions, & quiet offices)	0.0056	0.014	40 dBA	48 dBA

Source: U.S Department of Transportation, Federal Transit Administration, "Transit Noise and Vibration Impact Assessment," May 2006.

Notes to Table 3:

1. ***"Frequent Events" is defined as more than 70 vibration events per day. Most rapid transit projects fall into this category.***

2. ***"Infrequent Events" is defined as fewer than 70 vibration events per day. This category includes most commuter rail systems.***

3. ***This criterion limit is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes. Vibration sensitive manufacturing or research will require detailed evaluation to define acceptable vibration levels. Ensuring lower vibration levels in a building often requires special design of the HVAC systems and stiffened floors.***

4. ***Vibration-sensitive equipment is not sensitive to ground-borne noise.***

5. ***There are some buildings, such as concert halls, TV and recording studios, and theaters, that can be very sensitive to vibration and noise but do not fit into any of the three categories. Table 4 gives criteria for acceptable levels of groundborne vibration and noise for these various types of special uses.***

6. ***For Categories 2 and 3 with occupied facilities, isolated events such as blasting are significant when the peak particle velocity (PPV) exceeds one inch per second. Continuous or frequent intermittent vibration sources such as impact pile drivers or brakers are significant when their PPV exceeds 0.1 inch per second.***

Table 4
Guidelines of Significance for
Ground-Borne Vibration and Noise Impacts for Special Buildings

Type of Building or Room	Ground-Borne Vibration Impact Levels (inches/sec rms)		Ground-Borne Noise Impact Levels (dB re 20 micro Pascals)	
	Frequent Events[1]	Infrequent Events[2]	Frequent Events[1]	Infrequent Events[2]
Concert Halls, TV Studios, and Recording Studios	0.0018	0.0018	25dBA	25dBA
Auditoriums	0.0040	0.010	30 dBA	38 dBA
Theaters	0.0040	0.010	35 dBA	43 dBA

Source: U.S Department of Transportation, Federal Transit Administration, "Transit Noise and Vibration Impact Assessment," May 2006.

Notes to Table 4:

1. ***"Frequent Events" is defined as more than 70 vibration events per day. Most rapid transit projects fall into this category.***
2. ***"Infrequent Events" is defined as fewer than 70 vibration events per day. This category includes most commuter rail systems.***
3. ***If the building will rarely be occupied when the trains are operating, there is no need to consider impact.***
4. ***For historic buildings and ruins, the allowable upper limit for continuous vibration to structures is identified to be 0.056 inches/second rms. Transient conditions (single-event) would be limited to approximately twice the continuous acceptable value.***

4.4 Sources for Guidelines

The significance guidelines listed above have been selected for the following reasons:

Significance guidelines 4.1.A.i, 4.1.B.i, 4.2.A, and 4.2.B are derived from existing local noise standards which in turn, were derived from State regulation to address human health and quality of life concerns. Additionally the guidelines are based study results of the relationship between noise exposure and percentage of community highly annoyed by noise (Table 7). Guideline 4.1.A is based on the San Diego County General Plan, Noise Element, Policy 4b, which establishes local noise standards for noise sensitive land uses. Guidelines 4.2.A and 4.2.B are based on the San Diego County Code of

Regulatory Ordinances, Title 3, Division 6, Chapter 4 Noise Abatement and Control, Sections 36.404 Sound Level Limits and 36.410, Construction Equipment.

Significance guideline 4.1.A.ii sets a limit for when a project will increase noise levels by 10 dB CNEL or more. This guideline is based on studies completed by the ISO on the topic of acoustics (ISO 362; ISO 1996 1-3; ISO 3095; and ISO 3740-3747). An increase of 10 dB is perceived as twice as loud; therefore, significantly increases the ambient sound level. Moreover, the ISO standard is in general conformance with State (+12 dB, CalTrans) and Federal (+10 to 15 dB, Federal Highway Administration) standards.

Significance guideline 4.1.B sets the interior noise level requirements based on Title 24 standards with exceptions for daytime uses and habitable rooms. 4.1.B.i sets a conservative limit for when a project will expose daytime noise sensitive areas for learning and study to "unsteady" background sources such as transportation noise defined by the American National Standards Institute (ANSI S12.60-2002 Guidelines). 4.1.B.ii identifies the minimum volume of a habitable room for interior noise analysis based on the dimensions described in Section 310.6 of Chapter 3 in the California Code of Regulations.

Significance guideline 4.3 establishes a limit for when a project will expose sensitive land uses to ground-borne vibrations or noise. This principal guideline for significance is based upon a report prepared by Harris, Miller, Miller & Hanson Inc., for the U.S. Department of Transportation titled "Transit Noise and Vibration Impact Assessment," dated May 2006. The report details levels of groundborne vibration and noise that may be harmful or interfere with noise sensitive land uses, as represented by the "Guidelines of Significance for Ground-Borne Vibration and Noise Effects" table. The study focuses on groundborne vibration and noise impacts associated with public transit, with an emphasis on transit that uses steel wheel system (i.e. trains). A second report by Jones and Stokes for the California Department of Transportation titled "Transportation- and Construction-induced Vibration Guidance Manual," dated June 2004 provided additional materials and explanations for the tabulated results and footnotes.

5.0 STANDARD MITIGATION AND PROJECT DESIGN CONSIDERATIONS

Noise mitigation measures used in the planning and land use approval process depend on the project under consideration, and the stage in the development process where the environmental analysis is being performed. At the land subdivision stage of project processing (e.g., Tentative Map or Tentative Parcel Map), noise-related design information is typically unavailable. Because of this, certain noise mitigation measures such as those related to precise design and construction requirements for structures cannot be utilized. For such projects, the Department of Planning and Land Use (DPLU) identifies the areas where protection is needed to assure that existing or future noise levels do not significantly affect noise sensitive uses, and applies a "noise protection easement" to those areas. The "noise protection easement" ensures that construction design or other technical noise mitigation measures are implemented as necessary to achieve mitigation. DPLU assures the application of these noise

mitigation measures at later stages of project processing (Site Plan, Grading Plan, Building Permit).

A similar approach is used during the rezone of the property. At this stage of the project processing, a "D" (Design) designator for noise is typically used to identify the area where protection is needed for noise sensitive uses.

At other stages of project processing, for example the Major Use Permit or Site Plan stage, typically sufficient site-specific design information is known, that specific design and construction noise mitigation measures may be determined. These noise mitigation measures can be included in the project's document of approval. A variety of noise mitigation measures can be used, including site design, outdoor living area location, project grading, noise attenuation walls and berms, etc. Technical and administrative noise mitigation measures can also be implemented, to reduce noise impacts from noise-producing equipment and operations on- and off-site.

Noise impact mitigation measures are often enforced at the Building Permit stage of project processing, to assure that building structure design will achieve the mitigation standards specified in the approval documents. Interior noise mitigation measures may include requirements for sound transmission rate of different building elements, mechanical ventilation, etc. Table 5 provides a grouping of some applicable mitigation measures that can be utilized to address the Significance Guidelines.

Table 5
Typical Mitigation Measures when Significance Guidelines are Exceeded

Significance Guideline	Typical Mitigation Applied to Reduce Effects Below Significance
4.1.A.i	Noise Barriers* (Solid walls, fences, earthen mounds), enclosures, noise easements.
4.1.A.ii	Noise Barriers* (Solid walls, fences, earthen mounds), enclosures.
4.1.A.iii	Noise Barriers* (Solid walls, fences, earthen mounds), noise easements, architectural design.
4.1.B.i	Building disposition, architecture, noise easements.
4.1.B.ii	Building disposition, architecture, noise easements.
4.2.A	Noise Barriers* (Solid walls, fences, earthen mounds, parapets), enclosures, source location, operating hours, monitoring.
4.2.B	Noise Barriers* (Solid walls, fences, earthen mounds, parapets), enclosures, source location, operating hours, monitoring.
4.3	Source modifications (dampening devices/materials), trenches, operational changes, buffer zones, monitoring.

* Noise barriers are expected to reasonably meet applicable zoning requirements for height and location.

6.0 REFERENCES

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Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects, October 1998.
Transportation- and Construction-induced Vibration Guidance Manual, June 2004.

California Health & Safety Code
California Noise Control Act (HSC §46000-46080)

California Public Resources Code
California Environmental Quality Act (PRC §21000-21178).

California State Building Code
Part 2, Title 24, CCR, Appendix Chapter 3, Sound Transmission Control, 1988.

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Wyle Research Report. Development of Ground Transportation Systems Noise Contours for the San Diego Region, WCT 73-8, December 1973.

Figure 1

San Diego County CNEL Contour Map

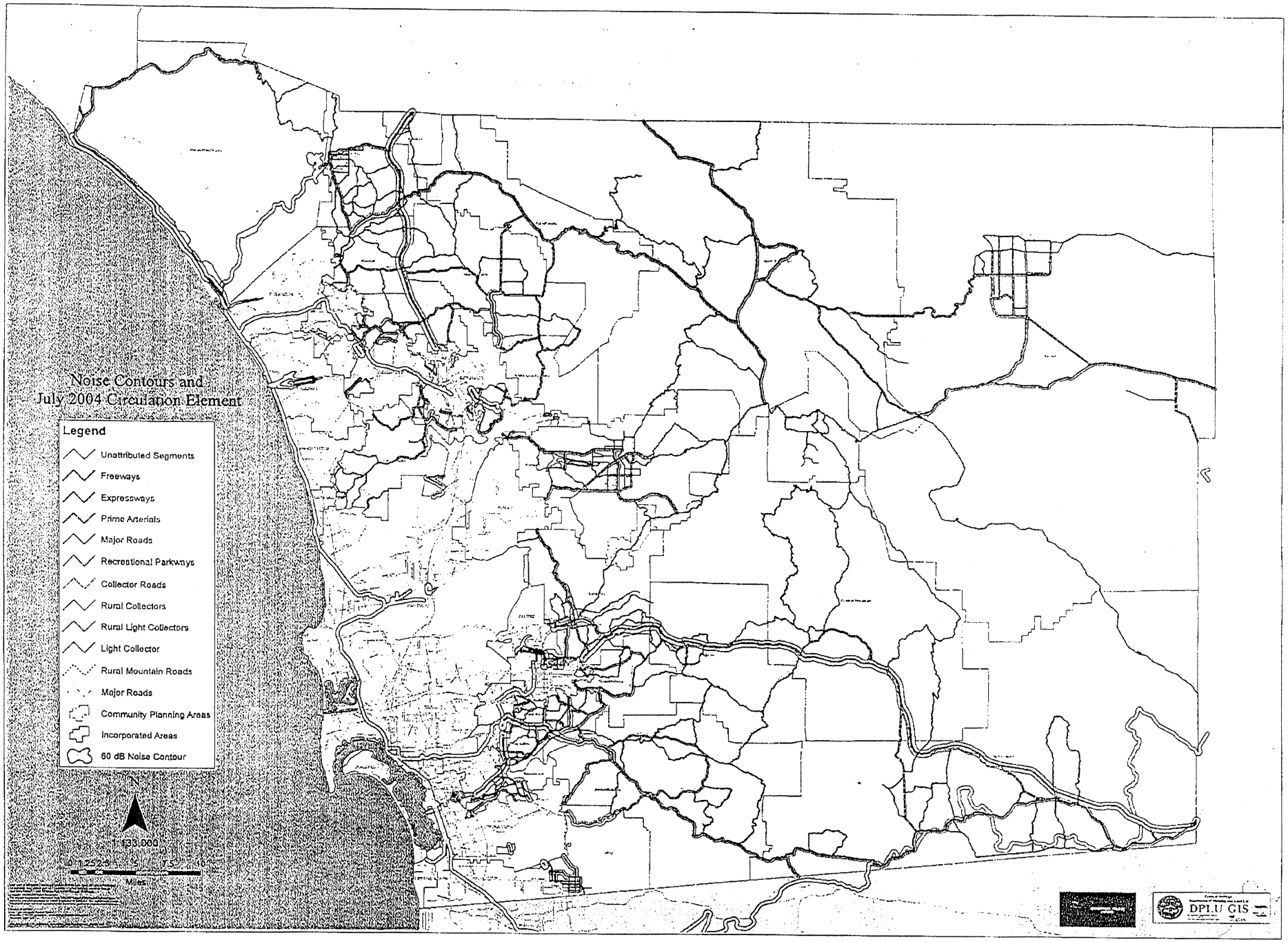

Noise Contours and
July 2004 Circulation Element
Legend
Unattributed Segments
Freeways
Expressways
Prime Arterials
Major Roads
Recreational Parkways
Collector Roads
Rural Collectors
Rural Light Collectors
Light Collector
Rural Mountain Roads
Major Roads
Community Planning Areas
Incorporated Areas
60 dB Noise Contour
N
1:133,000
0 1.25 2.5 5 7.5 10
Miles
DPLU GIS

Table 6

Sounds Levels Associated with Various Noise Sources and Events

Noise Source	A-weighted Sound Level, dB	Environment
Jet Engine at 80 ft	130-140	Threshold of Pain
Unmuffled Motorcycle at 3 ft Jet take-off at 300 feet	120-130	
	110-120	Rock and Roll Concert
Pneumatic Chipper Pile driver at 50 ft	100-110	Express train passing
Air Compressor at 20 ft Power lawnmower	90-100	Boiler Room Textile weaving plant
Food blender Freight train at 100 ft	80-90	Tabulating room Ventilation and equipment room
Vacuum cleaner Automatic Dishwasher	70-80	Busy downtown area Next to busy freeway
Speech at 1 ft	60-70	Large business office Next to busy street
Large transformer at 200 ft	50-60	Average residence with radio Large store Conversational speech
Occasional private auto at 100 ft Bird calls	40-50	Average residence, without radio Motion picture theater
Soft whisper at 5 ft Library	30-40	Room in quiet house at midnight
	20-30	Radio broadcasting studio
	0	Threshold of Hearing youth

Table 7

Relationship Between Noise Exposure and Percentage of Community Highly Annoyed

Item	Source	Day-Night Average Sound Level in decibels (*)							
		50	55	60	65	70	75	80	85
Percentage of Highly Annoyed	USAF	1.7%	3.3%	6.5%	12.3%	22.1%	36.5%	53.7%	70.1%
	Schultz	2.1%	4.0%	7.5%	13.6%	23.3%	37.1%	53.2%	68.9%

(*) Numerically, Day-Night Average Sound Level and CNEL are practically the same (difference is within ±1 dB).

Sources: Federal Interagency Committee on Noise (FICON) "Federal Agency Review of Selected Airport Noise Analysis Issues", August 1992, p. 3-6, Figure 3.1: Comparison of logistic fits.
Synthesis of Social Surveys on Annoyance Due to Noise, by T.J. Schultz. (1978) J. Acoust. Soc. Am. 64, 377-405.

Table 8

Screening Criteria for Potential Adverse Traffic Noise Effects

Road Classification	Roadway Design ROW Width (feet)	# of Travel Lanes	Median Width (feet)	ADT at LOS C	Traffic Mix		Traffic Speed (mph)	CNEL Noise Contour Distance for C/L (ft)			
					% MT	% HT		CNEL 60 dB	CNEL 65 dB	CNEL 70 dB	CNEL 75 dB
Expressway	146	6	34	70,000	5	3	55	1,000	500	250	120
Prime Arterial	122	6	14	44,600	5	3	55	800	380	180	100
Major Road	98	4	14	29,600	5	3	55	580	270	120	60
Collector	84	4	0	27,400	5	2	45	360	170	80	N/A
Light Collector	60	2	0	7,100	5	1	45	130	60	N/A	N/A
Rural Collector	84	2	0	7,100	5	1	40	110	50	N/A	N/A
Rural Light Collector	60	2	0	7,100	5	1	40	110	50	N/A	N/A
Rural Mountain	100	2	0	7,100	5	1	40	110	50	N/A	N/A
Recreational Parkway	100	2	0	7,100	1	0.5	25	50	N/A	N/A	N/A

Notes: The estimates are based on the following generalized assumptions: subtended angle – 85 to 85 degrees; "level" topography; "soft site" sound propagation conditions (4.5 dB noise reduction per the doubling of distance); 24-hour traffic distribution per Wyle Laboratories Report "Development of Ground Transportation Systems Noise Contours for the San Diego Region" (1973).

C/L – roadway centerline.
CNEL – Community Noise Equivalent Level in decibels (dB).
%MT – percent of medium trucks.
%HT – percent of heavy trucks. Traffic mix data are averages of traffic counts by County of San Diego Department of Public Works. Actual traffic mix may differ from the averages listed above.
N/A – noise contour does not exist or is less than 50 ft from the road centerline.

Warning: The above data should be used only to determine if there is the potential for noise sensitive land uses being impacted by present or future excessive noise levels. Actual noise contour distances could be different (generally, shorter). For project determinations, a noise survey must be completed using actual information on traffic volume, mix, speed, project topography, etc.

Table 9

Screening Criteria for Potential Adverse Ground-Borne Vibration and Noise Effects

Land Use Category	Screening Distance (feet from ROW or property line)
Category 1: Buildings where low ambient vibration is essential for interior operations. (research and manufacturing facilities with special vibration constraints) Special Use Buildings: Concert Halls, TV Studios, and Recording Studios	600 feet
Category 2: Residences and buildings where people normally sleep. (hotels, hospitals, residences, and other sleeping facilities) Special Use Buildings: Auditoriums and Theaters	200 feet
Category 3: Institutional land uses with primarily daytime use. (schools, churches, libraries, other institutions, and quiet offices)	120 feet

Source: U.S Department of Transportation, Federal Transit Administration, "Transit Noise and Vibration Impact Assessment," May 2006.

Notes:

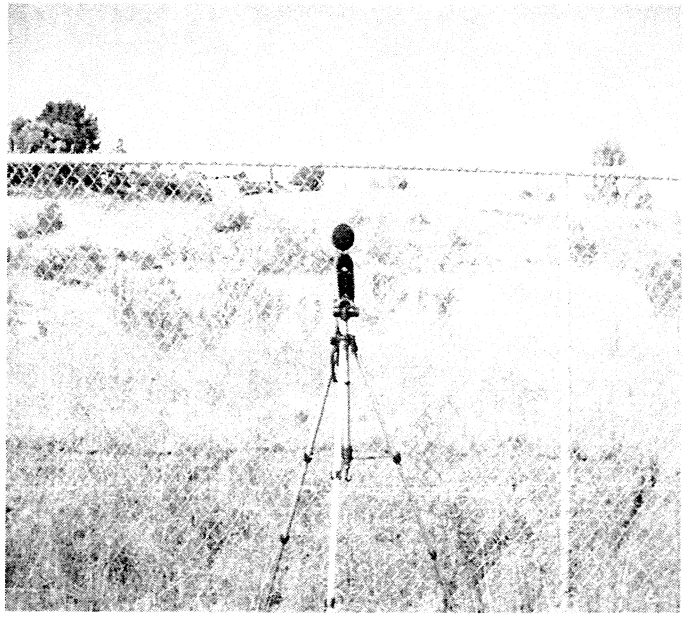
1. "Frequent Events" is defined as more than 70 vibration events per day. Most rapid transit projects fall into this category.
2. "Infrequent Events" is defined as fewer than 70 vibration events per day. This category includes most commuter rail systems.
3. This criterion limit is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes. Vibration sensitive manufacturing or research will require detailed evaluation to define acceptable vibration levels. Ensuring lower vibration levels in a building often requires special design of the HVAC systems and stiffened floors.
4. Vibration-sensitive equipment is not sensitive to ground-borne noise.

APPENDIX B

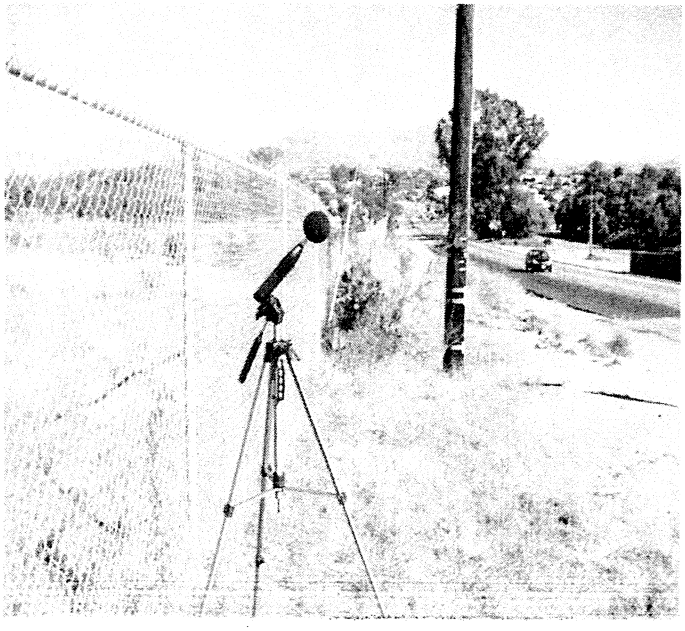
STUDY AREA PHOTOS

Monitoring Location 1

Western View along Highway 8 Business Route



Northern View from Highway 8 Business Route



Eastern View along Highway 8 Business Route

APPENDIX C

SPECTRAL NOISE READING PRINTOUTS

Summary Report
File Name:
User:
Location:
Job Description:

17 December 2007 09:04:55
LxT_Data.004
A. Stalker
Settlers Point
5365

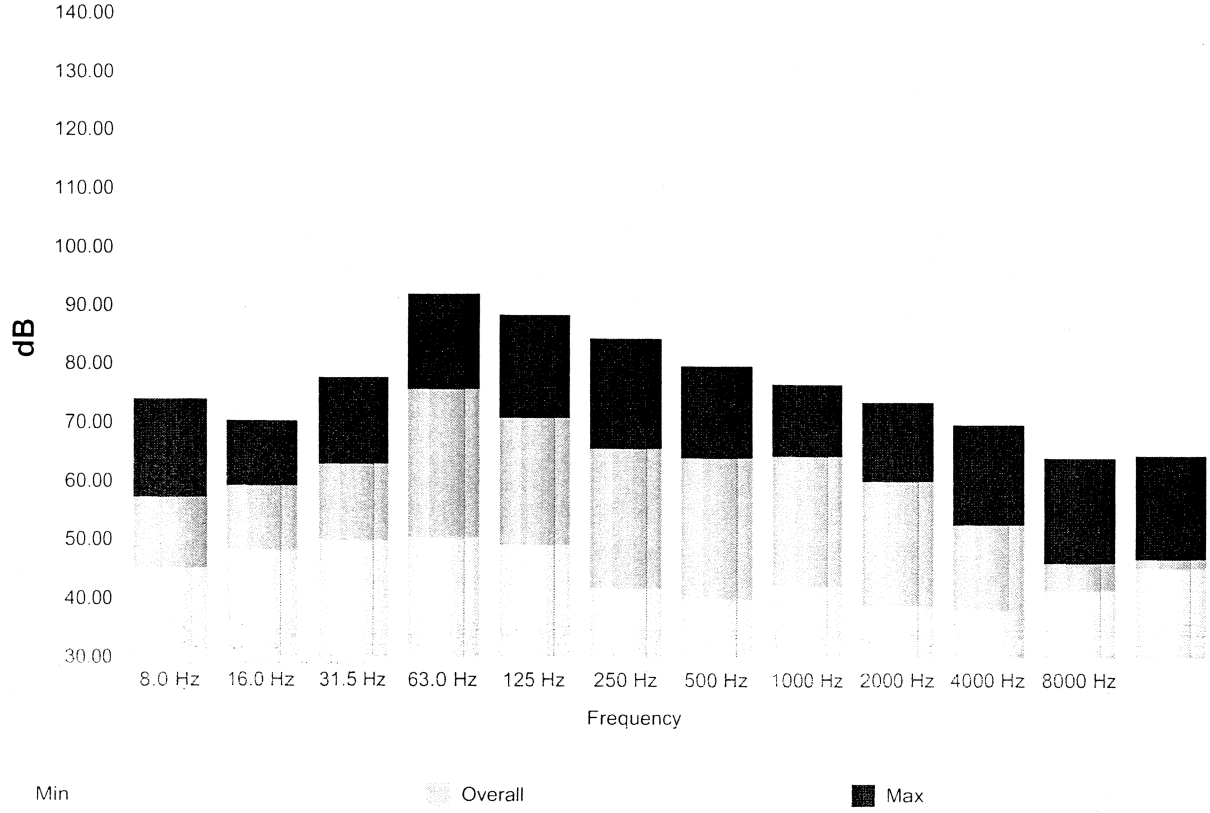
Serial Number:		01146	Start:	2007 Nov 07 22:49:06
Model Number:		LxT1	Stop:	2007 Nov 07 22:59:07
RMS Weighting:		A Weighting	Run Time:	00:10:00
Peak Weighting::		Z Weighting	Pre Calibration:	2007 Nov 07 21:21:22
Detector:		Slow	Post Calibration:	2007 Nov 27 12:36:30
Preamp:		PRMLXT1	Deviation:	0.1 dB
Integration Method:		Exponential	OBA Range:	Normal
			OBA Bandwidth:	1/1 and 1/3

Leq:		67.9	dBA	L5.0:	73.0 dBA
Lmax:	@ 22:53:18	82.3	dBA	L10.0:	71.3 dBA
Lpeak (max):	@ 22:53:18	103.8	dB	L33.3:	67.0 dBA
Min:	@ 22:57:56	45.9	dBA	L50.0:	63.7 dBA
Event Counts (SPL Trigger 85.0 dB):		0		L66.6:	58.8 dBA
Event Counts (SPL Trigger 115.0 dB):		0		L90.0:	51.0 dBA
Event Counts (Lpeak Trigger 135.0 dB):		0			

Dose:	0.0	0.0	%	Lep (8):	51.1 dBA
Projected Dose:	0.0	0.2	%	LE:	95.7 dBA
Projected TWA:	---	45.4	dBA	SE:	411.9 µPa²hr
TWA (8):	---	17.5	dBA	SE(8):	19.8 mPa²hr
Name:	OSHA-1	OSHA-2		SE(40):	98.8 mPa²hr
Exchange Rate:	5	5			
Threshold:	90	80	dBA		
Criterion Level:	90.0	90.0	dBA		
Criterion Duration:	8.0	8.0	hours		

Note:
44 feet from the centerline of Highway 8 Business Route

1/1 Octave

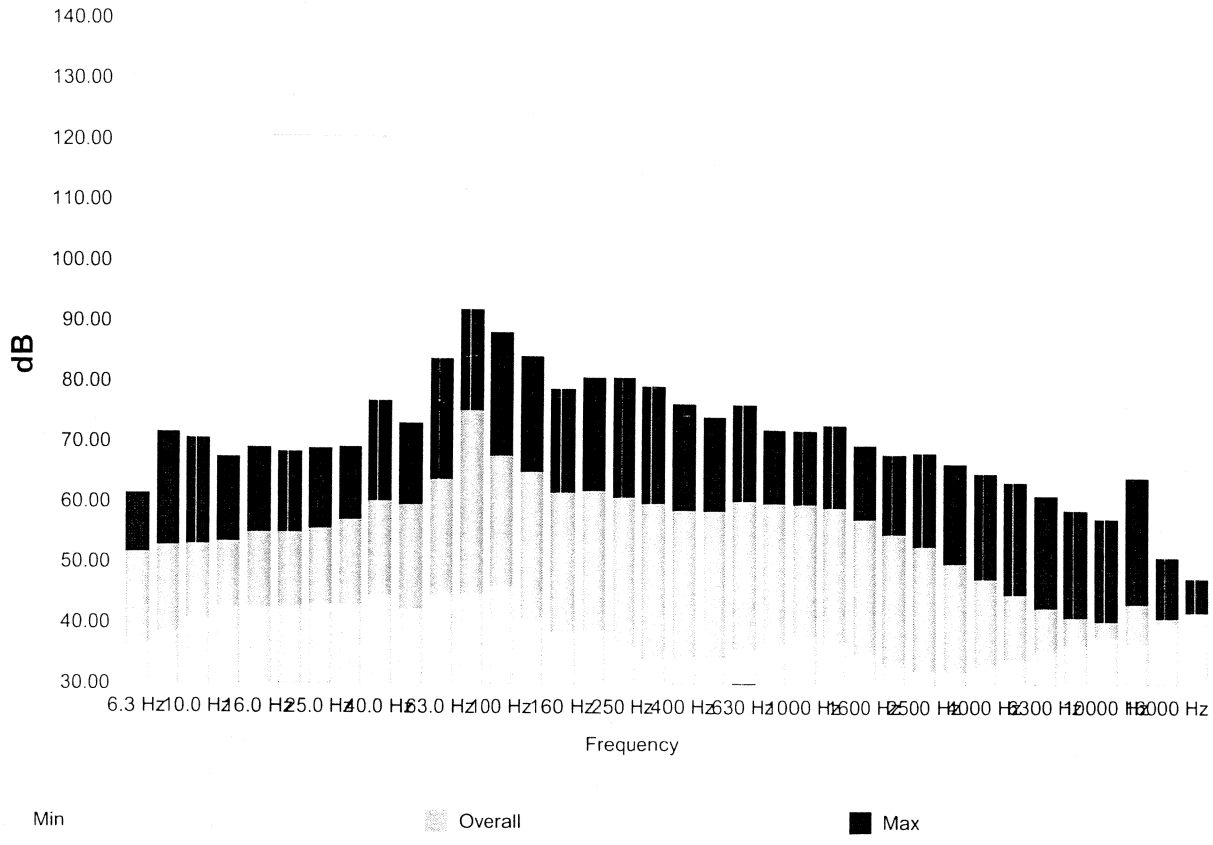


Summary Report
File Name:
User:
Location:
Job Description:

17 December 2007 09:04:55
LxT_Data.004
A. Stalker
Settlers Point
5365

Serial Number:	01146	Start:	2007 Nov 07 22:49:06
Model Number:	LxT1	Stop:	2007 Nov 07 22:59:07
RMS Weighting:	A Weighting	Run Time:	00:10:00
Peak Weighting::	Z Weighting	Pre Calibration:	2007 Nov 07 21:21:22
Detector:	Slow	Post Calibration:	2007 Nov 27 12:36:30
Preamp:	PRMLXT1	Deviation:	0.1 dB
Integration Method:	Exponential	OBA Range:	Normal
		OBA Bandwidth:	1/1 and 1/3

1/3 Octave



APPENDIX D

NOISE CONTOUR MODEL INPUTS AND CALCULATIONS

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Conditions
Road Name: Los Coches Road
Road Segment: Woodside Ave. to Wellington Hill

Project Name: Settler's Point
Job Number: 5365
Analyst: A. Stalker

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,340 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,234 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	110.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	10
Medium Trucks (2 Axles):	10
Heavy Trucks (3+ Axles):	10

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	80.0%	7.0%	13.0%	95.00%
Medium Trucks:	80.0%	7.0%	13.0%	3.00%
Heavy Trucks:	80.0%	7.0%	13.0%	2.00%

Noise Source Elevations (in feet)

Autos:	0.000	
Medium Trucks:	2.297	
Heavy Trucks:	8.006	*Grade Adjustment:* 0.0

Lane Equivalent Distance (in feet)

Autos:	108.632
Medium Trucks:	108.551
Heavy Trucks:	108.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-2.02	-3.44	0.00	*-1.04*	0.000	0.000
Medium Trucks:	82.40	-17.02	-3.44	0.00	*-1.15*	0.000	0.000
Heavy Trucks:	86.40	-18.79	-3.44	0.00	*-1.43*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.3	64.6	60.0	57.9	65.9	66.2
Medium Trucks:	61.9	60.2	55.6	53.5	61.5	61.8
Heavy Trucks:	64.2	62.4	57.9	55.8	63.7	64.0
Vehicle Noise:	69.3	67.5	63.0	60.9	68.8	69.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	84	266	842	2,664
CNEL:	90	285	901	2,849

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Conditions
Road Name: Los Coches Road
Road Segment: Wellington Hill Dr. to Highway 8 B

Project Name: Settler's Point
Job Number: 5365
Analyst: A. Stalker

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,730 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,773 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	110.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	10
Medium Trucks (2 Axles):	10
Heavy Trucks (3+ Axles):	10

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	80.0%	7.0%	13.0%	95.00%
Medium Trucks:	80.0%	7.0%	13.0%	3.00%
Heavy Trucks:	80.0%	7.0%	13.0%	2.00%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	108.632
Medium Trucks:	108.551
Heavy Trucks:	108.559

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	-0.44	-3.44	0.00	*-1.04*	0.000	0.000
Medium Trucks:	82.40	-15.45	-3.44	0.00	*-1.15*	0.000	0.000
Heavy Trucks:	86.40	-17.21	-3.44	0.00	*-1.43*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	67.9	66.1	61.6	59.5	67.5	67.8
Medium Trucks:	63.5	61.8	57.2	55.1	63.1	63.4
Heavy Trucks:	65.7	64.0	59.4	57.3	65.3	65.6
Vehicle Noise:	70.9	69.1	64.5	62.4	70.4	70.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	121	383	1,210	3,827
CNEL:	129	409	1,295	4,094

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Conditions
Road Name: Los Coches Road
Road Segment: Highway 8 Business to Interstate

Project Name: Settler's Point
Job Number: 5365
Analyst: A. Stalker

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	19,800 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,980 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	110.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	10
Medium Trucks (2 Axles):	10
Heavy Trucks (3+ Axles):	10

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	80.0%	7.0%	13.0%	95.00%
Medium Trucks:	80.0%	7.0%	13.0%	3.00%
Heavy Trucks:	80.0%	7.0%	13.0%	2.00%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	108.632
Medium Trucks:	108.551
Heavy Trucks:	108.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	0.03	-3.44	0.00	*-1.04*	0.000	0.000
Medium Trucks:	82.40	-14.97	-3.44	0.00	*-1.15*	0.000	0.000
Heavy Trucks:	86.40	-16.73	-3.44	0.00	*-1.43*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.4	66.6	62.1	60.0	67.9	68.2
Medium Trucks:	64.0	62.2	57.7	55.6	63.6	63.9
Heavy Trucks:	66.2	64.5	59.9	57.8	65.8	66.1
Vehicle Noise:	71.3	69.6	65.0	62.9	70.9	71.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	135	427	1,351	4,274
CNEL:	145	457	1,446	4,572

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Conditions
Road Name: Wellington Hill Drive
Road Segment: West of Los Coches Rd.

Project Name: Settler's Point
Job Number: 5365
Analyst: A. Stalker

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,260 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	126 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	110.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	10
Medium Trucks (2 Axles):	10
Heavy Trucks (3+ Axles):	10

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	80.0%	7.0%	13.0%	95.00%
Medium Trucks:	80.0%	7.0%	13.0%	3.00%
Heavy Trucks:	80.0%	7.0%	13.0%	2.00%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	109.950
Medium Trucks:	109.869
Heavy Trucks:	109.877

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	58.73	-8.50	-3.49	0.00	*-1.04*	0.000	0.000
Medium Trucks:	70.80	-23.51	-3.49	0.00	*-1.15*	0.000	0.000
Heavy Trucks:	77.97	-25.27	-3.49	0.00	*-1.43*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	46.7	45.0	40.4	38.3	46.3	46.6
Medium Trucks:	43.8	42.0	37.5	35.4	43.4	43.7
Heavy Trucks:	49.2	47.5	42.9	40.8	48.8	49.1
Vehicle Noise:	51.9	50.1	45.6	43.5	51.5	51.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	2	5	15	49
CNEL:	2	5	16	52

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Conditions
Road Name: Highway 8 Business
Road Segment: West of Project Site

Project Name: Settler's Point
Job Number: 5365
Analyst: A. Stalker

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,960 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	996 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	110.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	10
Medium Trucks (2 Axles):	10
Heavy Trucks (3+ Axles):	10

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	80.0%	7.0%	13.0%	95.00%
Medium Trucks:	80.0%	7.0%	13.0%	3.00%
Heavy Trucks:	80.0%	7.0%	13.0%	2.00%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	107.238
Medium Trucks:	107.156
Heavy Trucks:	107.164

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	-2.95	-3.38	0.00	*-1.04*	0.000	0.000
Medium Trucks:	82.40	-17.96	-3.38	0.00	*-1.15*	0.000	0.000
Heavy Trucks:	86.40	-19.72	-3.38	0.00	*-1.43*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	65.4	63.7	59.1	57.0	65.0	65.3
Medium Trucks:	61.1	59.3	54.7	52.7	60.6	60.9
Heavy Trucks:	63.3	61.5	57.0	54.9	62.9	63.2
Vehicle Noise:	68.4	66.6	62.1	60.0	68.0	68.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	69	218	689	2,178
CNEL:	74	233	737	2,330

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Conditions
Road Name: Highway 8 Business
Road Segment: East of Project Site

Project Name: Settler's Point
Job Number: 5365
Analyst: A. Stalker

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,050 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,005 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	110.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	10
Medium Trucks (2 Axles):	10
Heavy Trucks (3+ Axles):	10

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	80.0%	7.0%	13.0%	95.00%
Medium Trucks:	80.0%	7.0%	13.0%	3.00%
Heavy Trucks:	80.0%	7.0%	13.0%	2.00%

Noise Source Elevations (in feet)

Autos:	0.000	
Medium Trucks:	2.297	
Heavy Trucks:	8.006	*Grade Adjustment:* 0.0

Lane Equivalent Distance (in feet)

Autos:	107.238
Medium Trucks:	107.156
Heavy Trucks:	107.164

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-2.91	-3.38	0.00	*-1.04*	0.000	0.000
Medium Trucks:	82.40	-17.92	-3.38	0.00	*-1.15*	0.000	0.000
Heavy Trucks:	86.40	-19.68	-3.38	0.00	*-1.43*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.5	63.7	59.2	57.1	65.1	65.3
Medium Trucks:	61.1	59.3	54.8	52.7	60.7	61.0
Heavy Trucks:	63.3	61.6	57.0	54.9	62.9	63.2
Vehicle Noise:	68.4	66.7	62.1	60.0	68.0	68.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	69	220	695	2,197
CNEL:	74	235	743	2,351

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project
Road Name: Los Coches Road
Road Segment: Woodside Ave. to Wellington Hill

Project Name: Settler's Point
Job Number: 5365
Analyst: A. Stalker

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,980 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,298 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	110.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	10
Medium Trucks (2 Axles):	10
Heavy Trucks (3+ Axles):	10

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	80.0%	7.0%	13.0%	95.00%
Medium Trucks:	80.0%	7.0%	13.0%	3.00%
Heavy Trucks:	80.0%	7.0%	13.0%	2.00%

Noise Source Elevations (in feet)

Autos:	0.000	
Medium Trucks:	2.297	
Heavy Trucks:	8.006	*Grade Adjustment:* 0.0

Lane Equivalent Distance (in feet)

Autos:	108.632
Medium Trucks:	108.551
Heavy Trucks:	108.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-1.80	-3.44	0.00	*-1.04*	0.000	0.000
Medium Trucks:	82.40	-16.81	-3.44	0.00	*-1.15*	0.000	0.000
Heavy Trucks:	86.40	-18.57	-3.44	0.00	*-1.43*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.5	64.8	60.2	58.1	66.1	66.4
Medium Trucks:	62.2	60.4	55.8	53.8	61.7	62.0
Heavy Trucks:	64.4	62.6	58.1	56.0	64.0	64.2
Vehicle Noise:	69.5	67.7	63.2	61.1	69.1	69.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	89	280	886	2,802
CNEL:	95	300	948	2,997

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project
Road Name: Los Coches Road
Road Segment: Wellington Hill Dr. to Highway 8 B

Project Name: Settler's Point
Job Number: 5365
Analyst: A. Stalker

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,790 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	110.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	10
Medium Trucks (2 Axles):	10
Heavy Trucks (3+ Axles):	10

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	80.0%	7.0%	13.0%	95.00%
Medium Trucks:	80.0%	7.0%	13.0%	3.00%
Heavy Trucks:	80.0%	7.0%	13.0%	2.00%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	108.632
Medium Trucks:	108.551
Heavy Trucks:	108.559

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	-0.40	-3.44	0.00	*-1.04*	0.000	0.000
Medium Trucks:	82.40	-15.41	-3.44	0.00	*-1.15*	0.000	0.000
Heavy Trucks:	86.40	-17.17	-3.44	0.00	*-1.43*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	67.9	66.2	61.6	59.5	67.5	67.8
Medium Trucks:	63.6	61.8	57.2	55.2	63.1	63.4
Heavy Trucks:	65.8	64.0	59.5	57.4	65.4	65.6
Vehicle Noise:	70.9	69.1	64.6	62.5	70.5	70.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	122	386	1,222	3,864
CNEL:	131	413	1,307	4,133

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project
Road Name: Los Coches Road
Road Segment: Highway 8 Business to Interstate

Project Name: Settler's Point
Job Number: 5365
Analyst: A. Stalker

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	20,760 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,076 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	110.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	10
Medium Trucks (2 Axles):	10
Heavy Trucks (3+ Axles):	10

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	80.0%	7.0%	13.0%	95.00%
Medium Trucks:	80.0%	7.0%	13.0%	3.00%
Heavy Trucks:	80.0%	7.0%	13.0%	2.00%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	108.632
Medium Trucks:	108.551
Heavy Trucks:	108.559

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	0.24	-3.44	0.00	*-1.04*	0.000	0.000
Medium Trucks:	82.40	-14.77	-3.44	0.00	*-1.15*	0.000	0.000
Heavy Trucks:	86.40	-16.53	-3.44	0.00	*-1.43*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	68.6	66.8	62.3	60.2	68.1	68.4
Medium Trucks:	64.2	62.4	57.9	55.8	63.8	64.1
Heavy Trucks:	66.4	64.7	60.1	58.0	66.0	66.3
Vehicle Noise:	71.5	69.8	65.2	63.1	71.1	71.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	142	448	1,417	4,481
CNEL:	152	479	1,516	4,794

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project
Road Name: Wellington Hill Drive
Road Segment: West of Los Coches Rd.

Project Name: Settler's Point
Job Number: 5365
Analyst: A. Stalker

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,730 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	173 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	110.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	10
Medium Trucks (2 Axles):	10
Heavy Trucks (3+ Axles):	10

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	80.0%	7.0%	13.0%	95.00%
Medium Trucks:	80.0%	7.0%	13.0%	3.00%
Heavy Trucks:	80.0%	7.0%	13.0%	2.00%

Noise Source Elevations (in feet)

Autos:	0.000	
Medium Trucks:	2.297	
Heavy Trucks:	8.006	*Grade Adjustment:* 0.0

Lane Equivalent Distance (in feet)

Autos:	109.950
Medium Trucks:	109.869
Heavy Trucks:	109.877

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-7.13	-3.49	0.00	*-1.04*	0.000	0.000
Medium Trucks:	70.80	-22.13	-3.49	0.00	*-1.15*	0.000	0.000
Heavy Trucks:	77.97	-23.89	-3.49	0.00	*-1.43*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	48.1	46.4	41.8	39.7	47.7	48.0
Medium Trucks:	45.2	43.4	38.9	36.8	44.7	45.0
Heavy Trucks:	50.6	48.8	44.3	42.2	50.2	50.4
Vehicle Noise:	53.3	51.5	46.9	44.9	52.8	53.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	2	7	21	67
CNEL:	2	7	23	71

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project
Road Name: Highway 8 Business
Road Segment: West of Project Site

Project Name: Settler's Point
Job Number: 5365
Analyst: A. Stalker

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,050 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	110.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	10
Medium Trucks (2 Axles):	10
Heavy Trucks (3+ Axles):	10

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	80.0%	7.0%	13.0%	95.00%
Medium Trucks:	80.0%	7.0%	13.0%	3.00%
Heavy Trucks:	80.0%	7.0%	13.0%	2.00%

Noise Source Elevations (in feet)

Autos:	0.000	
Medium Trucks:	2.297	
Heavy Trucks:	8.006	*Grade Adjustment:* 0.0

Lane Equivalent Distance (in feet)

Autos:	107.238
Medium Trucks:	107.156
Heavy Trucks:	107.164

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	-2.72	-3.38	0.00	*-1.04*	0.000	0.000
Medium Trucks:	82.40	-17.73	-3.38	0.00	*-1.15*	0.000	0.000
Heavy Trucks:	86.40	-19.49	-3.38	0.00	*-1.43*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	65.7	63.9	59.4	57.3	65.2	65.5
Medium Trucks:	61.3	59.5	55.0	52.9	60.9	61.2
Heavy Trucks:	63.5	61.8	57.2	55.1	63.1	63.4
Vehicle Noise:	68.6	66.9	62.3	60.2	68.2	68.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	73	230	726	2,296
CNEL:	78	246	777	2,456

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project
Road Name: Highway 8 Business
Road Segment: East of Project Site

Project Name: Settler's Point
Job Number: 5365
Analyst: A. Stalker

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,180 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,118 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	110.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	10
Medium Trucks (2 Axles):	10
Heavy Trucks (3+ Axles):	10

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	80.0%	7.0%	13.0%	95.00%
Medium Trucks:	80.0%	7.0%	13.0%	3.00%
Heavy Trucks:	80.0%	7.0%	13.0%	2.00%

Noise Source Elevations (in feet)

Autos:	0.000	
Medium Trucks:	2.297	
Heavy Trucks:	8.006	*Grade Adjustment:* 0.0

Lane Equivalent Distance (in feet)

Autos:	107.238
Medium Trucks:	107.156
Heavy Trucks:	107.164

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	-2.45	-3.38	0.00	*-1.04*	0.000	0.000
Medium Trucks:	82.40	-17.45	-3.38	0.00	*-1.15*	0.000	0.000
Heavy Trucks:	86.40	-19.21	-3.38	0.00	*-1.43*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	66.0	64.2	59.6	57.5	65.5	65.8
Medium Trucks:	61.6	59.8	55.3	53.2	61.1	61.4
Heavy Trucks:	63.8	62.0	57.5	55.4	63.4	63.7
Vehicle Noise:	68.9	67.1	62.6	60.5	68.5	68.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	77	244	773	2,445
CNEL:	83	262	827	2,615

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project + Cumulative
Road Name: Los Coches Road
Road Segment: Woodside Ave. to Wellington Hill

Project Name: Settler's Point
Job Number: 5365
Analyst: A. Stalker

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,370 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,437 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	110.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	10
Medium Trucks (2 Axles):	10
Heavy Trucks (3+ Axles):	10

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	80.0%	7.0%	13.0%	95.00%
Medium Trucks:	80.0%	7.0%	13.0%	3.00%
Heavy Trucks:	80.0%	7.0%	13.0%	2.00%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	108.632
Medium Trucks:	108.551
Heavy Trucks:	108.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-1.36	-3.44	0.00	*-1.04*	0.000	0.000
Medium Trucks:	82.40	-16.36	-3.44	0.00	*-1.15*	0.000	0.000
Heavy Trucks:	86.40	-18.12	-3.44	0.00	*-1.43*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.0	65.2	60.7	58.6	66.5	66.8
Medium Trucks:	62.6	60.8	56.3	54.2	62.2	62.5
Heavy Trucks:	64.8	63.1	58.5	56.4	64.4	64.7
Vehicle Noise:	69.9	68.2	63.6	61.5	69.5	69.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	98	310	981	3,102
CNEL:	105	332	1,049	3,318

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project + Cumulative
Road Name: Los Coches Road
Road Segment: Wellington Hill Dr. to Highway 8 B

Project Name: Settler's Point
Job Number: 5365
Analyst: A. Stalker

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	19,330 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,933 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	110.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	10
Medium Trucks (2 Axles):	10
Heavy Trucks (3+ Axles):	10

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	80.0%	7.0%	13.0%	95.00%
Medium Trucks:	80.0%	7.0%	13.0%	3.00%
Heavy Trucks:	80.0%	7.0%	13.0%	2.00%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	108.632
Medium Trucks:	108.551
Heavy Trucks:	108.559

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	-0.07	-3.44	0.00	*-1.04*	0.000	0.000
Medium Trucks:	82.40	-15.08	-3.44	0.00	*-1.15*	0.000	0.000
Heavy Trucks:	86.40	-16.84	-3.44	0.00	*-1.43*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	68.3	66.5	62.0	59.9	67.8	68.1
Medium Trucks:	63.9	62.1	57.6	55.5	63.5	63.7
Heavy Trucks:	66.1	64.4	59.8	57.7	65.7	66.0
Vehicle Noise:	71.2	69.5	64.9	62.8	70.8	71.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	132	417	1,319	4,172
CNEL:	141	446	1,411	4,463

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project + Cumulative
Road Name: Wellington Hill Drive
Road Segment: West of Los Coches Rd.

Project Name: Settler's Point
Job Number: 5365
Analyst: A. Stalker

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,460 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	246 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	110.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	10
Medium Trucks (2 Axles):	10
Heavy Trucks (3+ Axles):	10

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	80.0%	7.0%	13.0%	95.00%
Medium Trucks:	80.0%	7.0%	13.0%	3.00%
Heavy Trucks:	80.0%	7.0%	13.0%	2.00%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	109.950
Medium Trucks:	109.869
Heavy Trucks:	109.877

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-5.60	-3.49	0.00	*-1.04*	0.000	0.000
Medium Trucks:	70.80	-20.60	-3.49	0.00	*-1.15*	0.000	0.000
Heavy Trucks:	77.97	-22.37	-3.49	0.00	*-1.43*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	49.6	47.9	43.3	41.2	49.2	49.5
Medium Trucks:	46.7	44.9	40.4	38.3	46.3	46.6
Heavy Trucks:	52.1	50.4	45.8	43.7	51.7	52.0
Vehicle Noise:	54.8	53.0	48.5	46.4	54.4	54.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	3	9	30	95
CNEL:	3	10	32	102

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project + Cumulative
Road Name: Highway 8 Business
Road Segment: West of Project Site

Project Name: Settler's Point
Job Number: 5365
Analyst: A. Stalker

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,420 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,242 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	110.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	10
Medium Trucks (2 Axles):	10
Heavy Trucks (3+ Axles):	10

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	80.0%	7.0%	13.0%	95.00%
Medium Trucks:	80.0%	7.0%	13.0%	3.00%
Heavy Trucks:	80.0%	7.0%	13.0%	2.00%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	107.238
Medium Trucks:	107.156
Heavy Trucks:	107.164

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	-1.99	-3.38	0.00	*-1.04*	0.000	0.000
Medium Trucks:	82.40	-17.00	-3.38	0.00	*-1.15*	0.000	0.000
Heavy Trucks:	86.40	-18.76	-3.38	0.00	*-1.43*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	66.4	64.6	60.1	58.0	66.0	66.3
Medium Trucks:	62.0	60.3	55.7	53.6	61.6	61.9
Heavy Trucks:	64.3	62.5	57.9	55.9	63.8	64.1
Vehicle Noise:	69.4	67.6	63.0	61.0	68.9	69.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	86	272	859	2,716
CNEL:	92	291	919	2,905

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project + Cumulative
Road Name: Highway 8 Business
Road Segment: East of Project Site

Project Name: Settler's Point
Job Number: 5365
Analyst: A. Stalker

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,940 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,294 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	110.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	10
Medium Trucks (2 Axles):	10
Heavy Trucks (3+ Axles):	10

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	80.0%	7.0%	13.0%	95.00%
Medium Trucks:	80.0%	7.0%	13.0%	3.00%
Heavy Trucks:	80.0%	7.0%	13.0%	2.00%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	107.238
Medium Trucks:	107.156
Heavy Trucks:	107.164

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	-1.81	-3.38	0.00	*-1.04*	0.000	0.000
Medium Trucks:	82.40	-16.82	-3.38	0.00	*-1.15*	0.000	0.000
Heavy Trucks:	86.40	-18.58	-3.38	0.00	*-1.43*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	66.6	64.8	60.3	58.2	66.1	66.4
Medium Trucks:	62.2	60.4	55.9	53.8	61.8	62.1
Heavy Trucks:	64.4	62.7	58.1	56.0	64.0	64.3
Vehicle Noise:	69.5	67.8	63.2	61.1	69.1	69.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	89	283	895	2,829
CNEL:	96	303	957	3,027

APPENDIX E

EXTERIOR ANALYSIS PREDICTION MODEL INPUTS AND CALCULATIONS FOR EXISTING CONDITIONS

```
SETTLERS POINT - EXISTING
T-PEAK HOUR TRAFFIC CONDITIONS, 1
 558 , 55 , 6 , 55 , 18 , 55
L-Highway 8 Business, 1
N,2015.,2568,598,
N,1516.,1932,616,
N,1051.,1347,652,
N,731.,926,677,
B-Old 80 Road Edge, 1 , 1 , 0 ,0
1995.,2592,598,598,
1499.,1941,616,616,
1040.,1356,652,652,
711.,950,677,677,
R, 1 , 67 ,500
1219,1620,642.,
C,C
```

SOUND32 - RELEASE 07/30/91

TITLE:
SETTLERS POINT - EXISTING

BARRIER DATA
****

BAR ELE	0	1	2	3	4	5	6	7	BAR ID	LENGTH	TYPE
1	-	0.*							B1 P1	818.6	BERM
2	-	0.*							B1 P2	744.4	BERM
3	-	0.*							B1 P3	523.2	BERM
	0	1	2	3	4	5	6	7			

1

REC	REC ID	DNL	PEOPLE	LEQ(CAL)
1	R-1	67.	500.	68.0

APPENDIX F

EXTERIOR ANALYSIS PREDICTION MODEL INPUTS
AND CALCULATIONS FOR BUILDOUT SCENARIO

```
SETTLERS POINT - First Floor Unmitigated
T-PEAK HOUR TRAFFIC CONDITIONS, 1
 1529 , 55 , 50 , 55 , 21 , 55
T-PEAK HOUR TRAFFIC CONDITIONS, 2
 2007 , 55 , 66 , 55 , 28 , 55
L-Highway 8 Business, 1
N,2015.,2568,598,
N,1516.,1932,616,
N,1051.,1347,652,
N,731.,926,677,
L-LOS COCHES, 2
N,2015.,2568,598,
N,1807.,3023,586,
N,1726.,3200,584,
N,1595.,3426,578,
B-Highway 8 Business Road Edge, 1 , 1 , 0 ,0
1995.,2592,598,598,
1499.,1941,616,616,
1040.,1356,652,652,
711.,950,677,677,
R, 1 , 67 ,500
961,1661,661.,
R, 2 , 67 ,500
1041,1801,661.,
R, 3 , 67 ,500
1145,1908,661.,
R, 4 , 67 ,500
879,1767,663.,
R, 5 , 67 ,500
968,1884,663.,
R, 6 , 67 ,500
1059,2002,663.,
R, 7 , 67 ,500
806,1870,664.,
R, 8 , 67 ,500
895,1987,665.,
R, 9 , 67 ,500
986,2096,665.,
R, 10 , 67 ,500
703,2002,667.,
R, 11 , 67 ,500
792,2119,667.,
R, 12 , 67 ,500
608,2132,689.,
R, 13 , 67 ,500
484,2267,705.,
R, 14 , 67 ,500
340,2445,695.,
R, 15 , 67 ,500
188,2654,665.,
R, 16 , 67 ,500
1229,2017,663.,
R, 17 , 67 ,500
1324,2136,663.,
R, 18 , 67 ,500
1431,2272,663.,
R, 19 , 67 ,500
1147,2114,665.,
R, 20 , 67 ,500
1243,2232,665.,
R, 21 , 67 ,500
1348,2367,666.,
R, 22 , 67 ,500
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1074,2217,668.,
R, 23 , 67 ,500
1169,2335,669.,
R, 24 , 67 ,500
1274,2470,669.,
R, 25 , 67 ,500
1066,2467,671.,
R, 26 , 67 ,500
1172,2602,671.,
R, 27 , 67 ,500
883,2238,687.,
R, 28 , 67 ,500
971,2349,687.,
R, 29 , 67 ,500
697,2238,689.,
R, 30 , 67 ,500
795,2345,689.,
R, 31 , 67 ,500
915,2490,690.,
R, 32 , 67 ,500
573,2372,713.,
R, 33 , 67 ,500
671,2480,713.,
R, 34 , 67 ,500
791,2625,713.,
R, 35 , 67 ,500
428,2551,717.,
R, 36 , 67 ,500
526,2658,717.,
R, 37 , 67 ,500
646,2803,717.,
R, 38 , 67 ,500
277,2760,713.,
R, 39 , 67 ,500
375,2868,713.,
R, 40 , 67 ,500
495,3012,713.,
C,C
```

SOUND32 - RELEASE 07/30/91

TITLE:
SETTLERS POINT - First Floor Unmitigated

BARRIER DATA
****

BAR ELE	BARRIER HEIGHTS 0	1	2	3	4	5	6	7	BAR ID	LENGTH	TYPE
1	-	0.*							B1 P1	818.6	BERM
2	-	0.*							B1 P2	744.4	BERM
3	-	0.*							B1 P3	523.2	BERM

1

REC	REC ID	DNL	PEOPLE	LEQ(CAL)
1	R-1	67.	500.	59.2
2	R-2	67.	500.	59.7
3	R-3	67.	500.	60.7
4	R-4	67.	500.	57.8
5	R-5	67.	500.	58.3
6	R-6	67.	500.	58.7
7	R-7	67.	500.	56.7
8	R-8	67.	500.	57.1
9	R-9	67.	500.	57.7
10	R-10	67.	500.	55.7
11	R-11	67.	500.	56.2
12	R-12	67.	500.	55.1
13	R-13	67.	500.	54.3
14	R-14	67.	500.	53.4
15	R-15	67.	500.	52.2
16	R-16	67.	500.	61.9
17	R-17	67.	500.	65.1
18	R-18	67.	500.	65.3
19	R-19	67.	500.	59.5
20	R-20	67.	500.	60.2
21	R-21	67.	500.	61.1
22	R-22	67.	500.	58.4
23	R-23	67.	500.	59.1
24	R-24	67.	500.	60.1
25	R-25	67.	500.	58.1
26	R-26	67.	500.	59.2
27	R-27	67.	500.	57.0
28	R-28	67.	500.	57.6
29	R-29	67.	500.	55.6
30	R-30	67.	500.	56.2
31	R-31	67.	500.	57.1
32	R-32	67.	500.	54.9
33	R-33	67.	500.	55.5
34	R-34	67.	500.	56.4
35	R-35	67.	500.	54.0
36	R-36	67.	500.	54.5
37	R-37	67.	500.	55.3
38	R-38	67.	500.	53.0
39	R-39	67.	500.	53.6
40	R-40	67.	500.	54.2

```
SETTLERS POINT - First Floor Mitigated
T-PEAK HOUR TRAFFIC CONDITIONS, 1
 1529 , 55 , 50 , 55 , 21 , 55
T-PEAK HOUR TRAFFIC CONDITIONS, 2
 2007 , 55 , 66 , 55 , 28 , 55
L-Highway 8 Business, 1
N,2015.,2568,598,
N,1516.,1932,616,
N,1051.,1347,652,
N,731.,926,677,
L-LOS COCHES, 2
N,2015.,2568,598,
N,1807.,3023,586,
N,1726.,3200,584,
N,1595.,3426,578,
B-Highway 8 Business Road Edge, 1 , 1 , 0 ,0
1995.,2592,598,598,
1499.,1941,616,616,
1040.,1356,652,652,
711.,950,677,677,
B-Barrier, 2 , 2 , 0 ,0
929.,1598,656,660,
1189.,1948,656,660,
1212.,1974,658,662,
1481.,2316,658,662,
1481.,2316,658,658,
1193.,2641,658,658,
R, 1 , 67 ,500
961,1661,661.,
R, 2 , 67 ,500
1041,1801,661.,
R, 3 , 67 ,500
1145,1908,661.,
R, 4 , 67 ,500
879,1767,663.,
R, 5 , 67 ,500
968,1884,663.,
R, 6 , 67 ,500
1059,2002,663.,
R, 7 , 67 ,500
806,1870,664.,
R, 8 , 67 ,500
895,1987,665.,
R, 9 , 67 ,500
986,2096,665.,
R, 10 , 67 ,500
703,2002,667.,
R, 11 , 67 ,500
792,2119,667.,
R, 12 , 67 ,500
608,2132,689.,
R, 13 , 67 ,500
484,2267,705.,
R, 14 , 67 ,500
340,2445,695.,
R, 15 , 67 ,500
188,2654,665.,
R, 16 , 67 ,500
1229,2017,663.,
R, 17 , 67 ,500
1324,2136,663.,
R, 18 , 67 ,500
1431,2272,663.,
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```
R, 19 , 67 ,500
1147,2114,665.,
R, 20 , 67 ,500
1243,2232,665.,
R, 21 , 67 ,500
1348,2367,666.,
R, 22 , 67 ,500
1074,2217,668.,
R, 23 , 67 ,500
1169,2335,669.,
R, 24 , 67 ,500
1274,2470,669.,
R, 25 , 67 ,500
1066,2467,671.,
R, 26 , 67 ,500
1172,2602,671.,
R, 27 , 67 ,500
883,2238,687.,
R, 28 , 67 ,500
971,2349,687.,
R, 29 , 67 ,500
697,2238,689.,
R, 30 , 67 ,500
795,2345,689.,
R, 31 , 67 ,500
915,2490,690.,
R, 32 , 67 ,500
573,2372,713.,
R, 33 , 67 ,500
671,2480,713.,
R, 34 , 67 ,500
791,2625,713.,
R, 35 , 67 ,500
428,2551,717.,
R, 36 , 67 ,500
526,2658,717.,
R, 37 , 67 ,500
646,2803,717.,
R, 38 , 67 ,500
277,2760,713.,
R, 39 , 67 ,500
375,2868,713.,
R, 40 , 67 ,500
495,3012,713.,
C,C
```

SOUND32 - RELEASE 07/30/91

TITLE:
SETTLERS POINT - First Floor Mitigated

BARRIER DATA
****

BAR ELE	BARRIER HEIGHTS 0	1	2	3	4	5	6	7	BAR ID	LENGTH	TYPE
1	-	0.*							B1 P1	818.6	BERM
2	-	0.*							B1 P2	744.4	BERM
3	-	0.*							B1 P3	523.2	BERM
4	-	4.*							B2 P1	436.0	MASONRY
5	-	4.*							B2 P2	34.8	MASONRY
6	-	4.*							B2 P3	435.1	MASONRY
7	-	2.*							B2 P4	4.0	MASONRY
8	-	0.*							B2 P5	434.2	MASONRY

0 1 2 3 4 5 6 7

1

REC	REC ID	DNL	PEOPLE	LEQ(CAL)
1	R-1	67.	500.	58.6
2	R-2	67.	500.	60.4
3	R-3	67.	500.	59.8
4	R-4	67.	500.	58.0
5	R-5	67.	500.	56.1
6	R-6	67.	500.	55.2
7	R-7	67.	500.	54.3
8	R-8	67.	500.	53.7
9	R-9	67.	500.	53.2
10	R-10	67.	500.	52.5
11	R-11	67.	500.	52.4
12	R-12	67.	500.	53.7
13	R-13	67.	500.	53.2
14	R-14	67.	500.	52.1
15	R-15	67.	500.	51.5
16	R-16	67.	500.	59.7
17	R-17	67.	500.	59.5
18	R-18	67.	500.	59.7
19	R-19	67.	500.	54.5
20	R-20	67.	500.	54.1
21	R-21	67.	500.	56.7
22	R-22	67.	500.	52.9
23	R-23	67.	500.	53.6
24	R-24	67.	500.	59.6
25	R-25	67.	500.	53.8
26	R-26	67.	500.	58.5
27	R-27	67.	500.	53.8
28	R-28	67.	500.	54.5
29	R-29	67.	500.	53.2
30	R-30	67.	500.	53.7
31	R-31	67.	500.	55.2
32	R-32	67.	500.	53.7
33	R-33	67.	500.	54.4
34	R-34	67.	500.	55.9
35	R-35	67.	500.	53.5
36	R-36	67.	500.	54.1

37	R-37	67.	500.	55.1
38	R-38	67.	500.	52.9
39	R-39	67.	500.	53.4
40	R-40	67.	500.	54.1

```
SETTLERS POINT - Second Floor With Barriers
T-PEAK HOUR TRAFFIC CONDITIONS, 1
 1529 , 55 , 50 , 55 , 21 , 55
T-PEAK HOUR TRAFFIC CONDITIONS, 2
 2007 , 55 , 66 , 55 , 28 , 55
L-Highway 8 Business, 1
N,2015.,2568,598,
N,1516.,1932,616,
N,1051.,1347,652,
N,731.,926,677,
L-LOS COCHES, 2
N,2015.,2568,598,
N,1807.,3023,586,
N,1726.,3200,584,
N,1595.,3426,578,
B-Highway 8 Business Road Edge, 1 , 1 , 0 ,0
1995.,2592,598,598,
1499.,1941,616,616,
1040.,1356,652,652,
711.,950,677,677,
B-Barrier, 2 , 2 , 0 ,0
929.,1598,656,660,
1189.,1948,656,660,
1212.,1974,658,662,
1481.,2316,658,662,
1481.,2316,658,658,
1193.,2641,658,658,
R, 1 , 67 ,500
961,1661,671.,
R, 2 , 67 ,500
1041,1801,671.,
R, 3 , 67 ,500
1145,1908,671.,
R, 4 , 67 ,500
879,1767,673.,
R, 5 , 67 ,500
968,1884,673.,
R, 6 , 67 ,500
1059,2002,673.,
R, 7 , 67 ,500
806,1870,674.,
R, 8 , 67 ,500
895,1987,675.,
R, 9 , 67 ,500
986,2096,675.,
R, 10 , 67 ,500
703,2002,677.,
R, 11 , 67 ,500
792,2119,677.,
R, 12 , 67 ,500
608,2132,699.,
R, 13 , 67 ,500
484,2267,715.,
R, 14 , 67 ,500
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R, 15 , 67 ,500
188,2654,675.,
R, 16 , 67 ,500
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R, 17 , 67 ,500
1324,2136,673.,
R, 18 , 67 ,500
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R, 19 , 67 ,500
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R, 30 , 67 ,500
795,2345,699.,
R, 31 , 67 ,500
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671,2480,723.,
R, 34 , 67 ,500
791,2625,723.,
R, 35 , 67 ,500
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R, 36 , 67 ,500
526,2658,727.,
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375,2868,723.,
R, 40 , 67 ,500
495,3012,723.,
C,C
```

SOUND32 - RELEASE 07/30/91

TITLE:
SETTLERS POINT - Second Floor With Barriers

BARRIER DATA
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BAR ELE	0	1	2	3	4	5	6	7	BAR ID	LENGTH	TYPE
1	-	0.*							B1 P1	818.6	BERM
2	-	0.*							B1 P2	744.4	BERM
3	-	0.*							B1 P3	523.2	BERM
4	-	4.*							B2 P1	436.0	MASONRY
5	-	4.*							B2 P2	34.8	MASONRY
6	-	4.*							B2 P3	435.1	MASONRY
7	-	2.*							B2 P4	4.0	MASONRY
8	-	0.*							B2 P5	434.2	MASONRY
	0	1	2	3	4	5	6	7			

1

REC	REC ID	DNL	PEOPLE	LEQ(CAL)
1	R-1	67.	500.	59.6
2	R-2	67.	500.	61.1
3	R-3	67.	500.	62.3
4	R-4	67.	500.	58.5
5	R-5	67.	500.	58.5
6	R-6	67.	500.	56.9
7	R-7	67.	500.	56.5
8	R-8	67.	500.	55.0
9	R-9	67.	500.	54.6
10	R-10	67.	500.	54.7
11	R-11	67.	500.	53.2
12	R-12	67.	500.	53.9
13	R-13	67.	500.	53.4
14	R-14	67.	500.	52.3
15	R-15	67.	500.	51.6
16	R-16	67.	500.	64.8
17	R-17	67.	500.	64.9
18	R-18	67.	500.	65.3
19	R-19	67.	500.	56.9
20	R-20	67.	500.	56.8
21	R-21	67.	500.	61.4
22	R-22	67.	500.	54.3
23	R-23	67.	500.	55.5
24	R-24	67.	500.	59.9
25	R-25	67.	500.	55.6
26	R-26	67.	500.	58.6
27	R-27	67.	500.	54.7
28	R-28	67.	500.	55.2
29	R-29	67.	500.	53.6
30	R-30	67.	500.	54.4
31	R-31	67.	500.	55.8
32	R-32	67.	500.	53.9
33	R-33	67.	500.	54.8
34	R-34	67.	500.	55.9
35	R-35	67.	500.	53.6
36	R-36	67.	500.	54.2

37	R-37	67.	500.	55.1
38	R-38	67.	500.	53.0
39	R-39	67.	500.	53.5
40	R-40	67.	500.	54.2

Chevron

KALASHO INC.
9312 Mission Gorge
SANTEE, CA 92071

FACSIMILE

TO HEDY FROM Ghazwar-Kalash

DATE 2-19-2008 RE Company Plan Company

PHONE NO 6194026188 FAX NO 6195621944

☐	☐	☐	☐
CALL SENDER	URGENT	REVIEW	INFORMATION

COMMENTS>>>

REC Consultants, Inc. Civil Engineering · Environmental

2442 Second Avenue
San Diego, CA 92101
Phone: 619.232.9200
Fax: 619.232.9210

February 13, 2008

Mr. Ghazwan Kalasho
9312 Mission Gorge Road
Santee, CA 92071

Subject: 4 Acre Site in Jamul, California

Dear Mr. Kalasho:

Thank you for considering REC to conduct biological consulting services for the approximately 4 acre site in the County of San Diego, near the community of Jamul.

Per your request, we are presenting the following scope and cost to complete biological tasks related to this project. The following tasks may be required by the County of San Diego.

Biological Technical Report

Per your request, REC biologists will complete a biological technical report that will outline the existing conditions of the site, the proposed impacts and general mitigation measures required per CEQA. As required, the biological technical report will also include a summary of sensitive species known to occur in the area, and a resources map.

The cost to complete the biological technical report is not expected to exceed $3,500.00 on a time and materials basis. You will be billed only for time spent. Any mileage and materials will be billed separately at our standard rate. This cost will include only one iteration of the biotechnical report. Revisions based on project redesign, County or client comments will be scoped through contract augments if required.

Optional Task

These tasks may be required by the County at a future date.

Wetland Delineation

A wetland delineation will be performed by REC to determine the limits of any wetlands onsite. The assessment of the onsite drainage will include an examination of the vegetation, soil pit analysis, indicators of hydrology and review of aerial photos of the onsite drainage. A report will be prepared detailing the results of the wetland delineation.

The cost to complete the wetland delineation is not expected to exceed $3,000.00 on a time and materials basis. You will be billed only for time spent. Any mileage and materials will be billed separately at our standard rate.

Wetland Permitting

The project may require permits from the U.S. Army Corps of Engineers, California Department of Fish and Game, and the Regional Water Quality Control Board for the construction of a crossing over the drainage located south of Highway 94. Once the wetland permit packages are submitted to the respective agencies, we will follow up with the agencies via telephone, e-mail, and correspondence until the permits are issued. In addition, the agency representatives will likely conduct an onsite meeting and may request additional documentation. Please note that the agencies are often unpredictable and delays may result from their workload or additional demands for information or clarification.

The cost to complete the above task should not exceed $4,500.00 on a time and materials basis. Additional consultation and the provision of additional information will be scoped through contract augments if required.

Rare Plant Surveys

A REC biologist will conduct a survey of the site to detect rare plants that potentially may inhabit the site. This will include several visits to the site in the spring and summer when rare plants are in bloom. The information gathered during these surveys will be summarized in the biological technical report.

The cost to complete the rare plant surveys is not expected to exceed $2,500.00 on a time and materials basis. You will be billed only for time spent. Any mileage and materials will be billed separately at our standard rate.

Quino Checkerspot Butterfly Surveys

A United States Fish and Wildlife Service (USFWS) permitted biologist will conduct a habitat assessment of the site to determine if Quino surveys would be required. If they are required the biologist will conduct a protocol survey of the site during the flight season. The surveys would be conducted on a weekly basis. Please note that the USFWS does not specify the length of the flight season. The minimum survey length is five weeks, however, due to wet conditions the flight season may be extended.

The cost to conduct Quino checkerpot butterfly surveys could range between $2,000.00 and $4,000 depending on the length of the survey season.

California Gnatcatcher Surveys

The survey will be performed by a USFWS permitted biologist for the species and include a report of findings. The survey for the California gnatcatcher will focus on the coastal sage scrub habitat onsite and will be conducted in conformance with current USFWS protocol (i.e., between the hours of dawn until noon and with weather restrictions). The USFWS requires three surveys be conducted one week apart to determine the presence or absence of California gnatcatchers on the site.

The cost to perform the survey and complete the report is not expected to exceed $3,500.00. Any materials will be billed separately at our standard rate. The results of the California gnatcatcher surveys are required to be submitted to the USFWS within 45 days after completion of the surveys. Please note that prior to beginning the USFWS protocol surveys, we must notify the USFWS ten days in advance.

Least Bell's Vireo

According to the least Bell's vireo (*Vireo bellii pusillus* -LBV) survey guidelines by the United States Fish and Wildlife Service (USFWS) dated January 2001, all riparian areas and any other potential vireo habitats should be surveyed at least 8 times during the period from April 10 to July 31. Each site visit should be conducted at least 10 days apart to maximize the detection of any vireos onsite. The cost to perform the surveys and complete the report is not expected to exceed $2,500.00 on a time basis. Any materials will be billed separately at our standard rate. The results of the LBV surveys are required to be submitted to the USFWS within 45 days after completion of the surveys.

Arroyo Toad Surveys

According to the 1999 survey protocol determined by the U.S. Fish and Wildlife Service, arroyo toad surveys will entail six surveys (with daytime and nighttime components) conducted during the toad breeding season (March 15 – July 1) with seven days between surveys. During the initial field work for this project, we will conduct a preliminary habitat assessment for the arroyo toad to determine if a protocol survey is required. If a survey is required, the scope and cost can be determined at that time. Please note that an arroyo toad survey will only be conducted within the pre-determined survey area.

The cost to perform the survey and complete the report is not expected to exceed $3,500.00. Any materials will be billed separately at our standard rate.

Please note that the above costs do not include any meetings with County staff. Responses to comments or changes to the report based on County comments will be billed on an hourly basis depending on available budget.

Ghazwan Kalasho
4 Acre Site in Jamul
Page 4

Please review the above costs and authorize the tasks that you would like REC to initiate regarding the 4 acre site located near Jamul. Please feel free to call me if you have any questions. Thank you. We look forward to working with you on this project.

Sincerely,

Victor Novik
Senior Biologist;

Authorization to proceed.

GHAZWAN KALASHO 2-19-2008

Signature Date

GHAZWAN KALASHO

Printed Name